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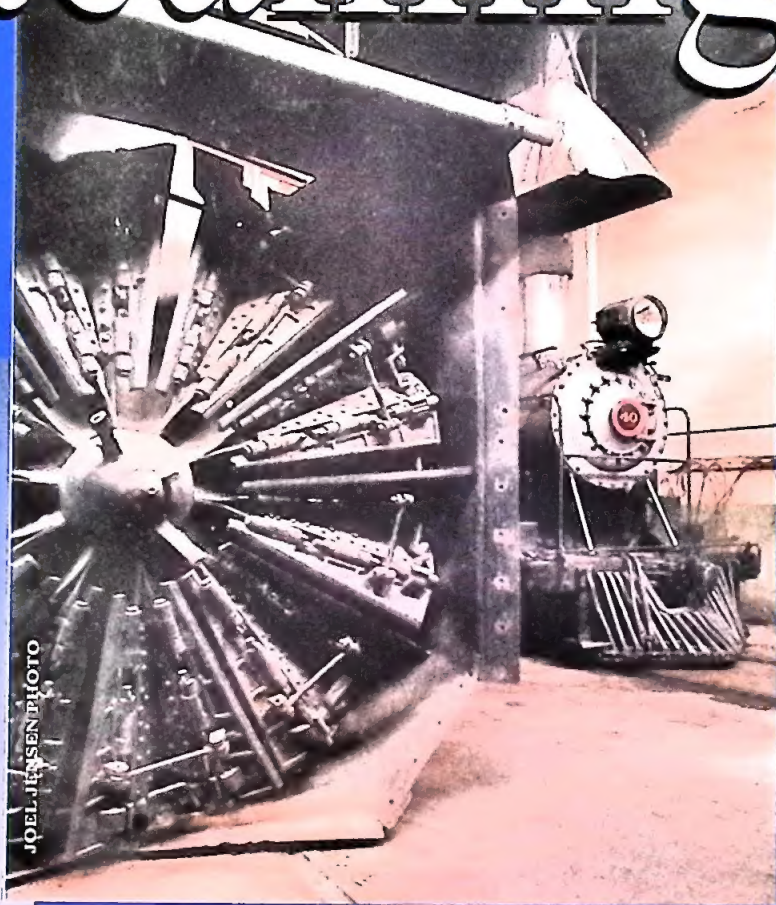
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Editor's Page

The many yesterdays of turbine locomotives

THE TURBINE-LOCOMOTIVE programs Eric Hirsimaki examines in his article on pages 20-36 comprise a fascinating chapter in American railroad motive-power history. The 1940's and '50's were watershed decades for American railroads, a period when, one by one, every major railroad switched from reciprocating steam locomotives to diesel-electrics. For a half-century now, oil-burning diesels have reigned supreme, virtually unchallenged as the universal form of motive power.

Yes, that's *virtually* unchallenged. As Eric explains, even as the diesel tidal wave was flooding ready tracks all across the nation, serious efforts were under way to chart a different course. Those efforts ultimately failed, but the turbine idea would not die.

In 1967-68, United Aircraft oversaw the construction of seven turbine-powered passenger-train sets, two for the U.S. Department of Transportation and five for Canadian National. Always troublesome, the TurboTrains lasted on Penn Central and Amtrak until 1973, and on CN and VIA Rail Canada until 1983. Amtrak acquired six French-built turbine sets of a different design in 1973-75 for Midwest corridor services, then seven similar ones from U.S. supplier Rohr for New York State trains in '76. The French Turboliners are long gone, while the New York units are in storage, despite a costly state-sponsored rebuilding.

And now there's Bombardier's JetTrain, developed in response to a U.S. DOT call for a 150-mph, non-electric passenger locomotive. Bombardier unveiled the 5000 h.p. turbine unit in October 2002, but given the state of even low-end high-speed rail in the U.S., orders may be a while in coming. It appears, though, that the turbine dream lives on.

Since the TurboTrains of the 1960's, turbine technology has been focused on intercity passenger equipment.



JAY POTTER

Robert S. McGonigal



ClassicTrains

THE GOLDEN YEARS OF RAILROADING

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ON THE COVER: Chesapeake & Ohio Nos. 500-501 were among the turbine projects of the 1940's and '50's that sought to preserve coal's status as the king of locomotive fuels (see page 20). C&O photo.

LEFT: Canadian National 4-6-0 No. 1576, in charge of mixed train 331 for Kincardine, Ontario, switches before leaving Palmerston, Ont., in October 1957 (see page 62). Herbert H. Harwood Jr. photo.

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A Burlington Northern Color Pictorial
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Contributors

James B. Armstrong ["Last Gasp of the Hoot Toot & Whistle," pages 36-39] wrote about the trains of Newfoundland in the Fall 2001 CLASSIC TRAINS. He's especially interested in narrow-gauge and railroading off the main line. He thanks John Craft and Mike Trent, fellow posters at the Narrow Gauge Discussion Forum (www.ngdiscussion.net) for their help in tracking down the history of HT&W No. 16.

Edward M. DeRouin ["Three Good Days in the Army," pages 46-49] is retired from a career with Commonwealth Edison and now writing and publishing books through his firm Pixels, Inc. He lives in La Fox, Ill. His one previous CLASSIC TRAINS article ["Call It in the Air"] was in our Summer 2003 issue.

George A. Forero Jr. ["Relics in the Roundhouse," pages 74-79] is a career railroader with 35 years service, currently working in Amtrak's System Rules Department. He started with a summer job as an extra-board clerk on the Long Island Rail Road. After graduating from Villanova University, he left for the Midwest and worked for the Soo Line and Burlington Northern. George's Amtrak career has taken him from St. Louis (he closed the old Union Station and opened the "temporary" one) to Washington, D.C., Boston, San Jose, and Chicago, where he currently resides and plan to stay. George enjoys practicing the craftsmanship required to make b&w prints, though he "reluctantly" added color slides to his photography some years ago. This is his first CLASSIC TRAINS byline.



John Gruber ["Herb Harwood's East and Midwest," pages 62-71] is contributing editor of CLASSIC TRAINS. An accomplished photographer himself, he also served as editor of *Vintage Rails* magazine. John, who is president of

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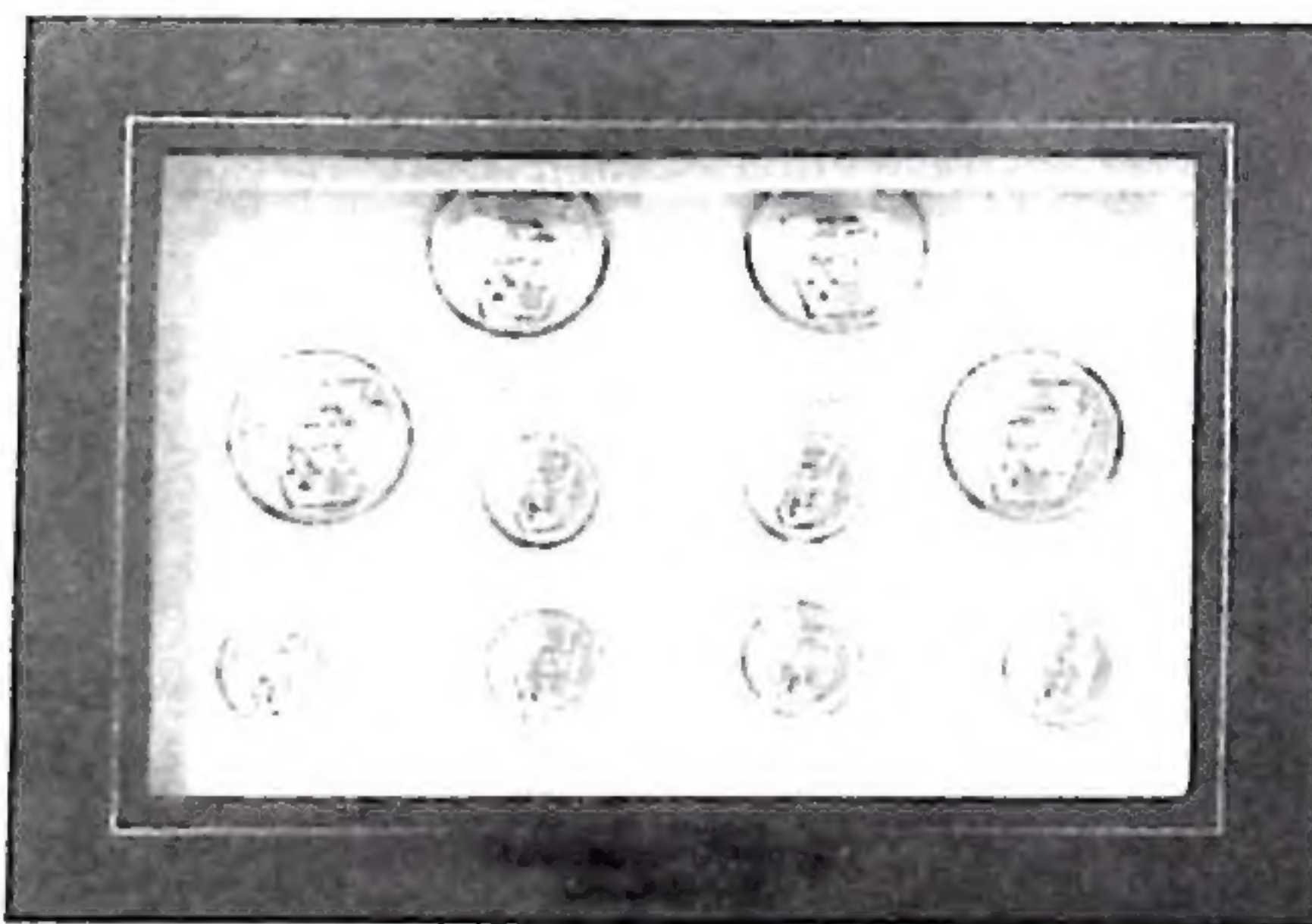
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Eric Hirsimaki ["Turbines: King Coal's Battle Against the Diesel," pages 20-35] is employed by the Cleveland-Cuyahoga County Port Authority as Operations/Facilities Manager. He has written extensively on Great Lakes shipping and railroad subjects. Eric has authored several books, including *Lima: The History* (Hundman Publishing 1987, reissued 2004); *Black Gold, Black Diamonds* (Mileposts Publishing), a series about the dieselization of the Pennsy; and *The Lakers* series (Mileposts Publishing) about Great Lakes shipping. He also produces an annual calendar of Great Lakes vessels for Cedco Publishing and various videos on Great Lakes and railroad topics. Eric resides in North Olmsted, Ohio. This is his second CLASSIC TRAINS byline.

Dennis R. Mize ["Southern's Not-So-Great Locomotive Chases," pages 58-61] is a graduate of the University of Tennessee with a major in transportation. He spent 16 years in Operations Management with Chicago & North Western. Dennis has written extensively about the Louisville & Nashville, but this is his first CLASSIC TRAINS byline. He lives in Punta Gorda, Fla.

Louis R. Saillard ["Fallen Flags Remembered: Columbus & Greenville," pages 14-17] was born in 1949 and raised in Hammond, La., in an area rich in short-line and industrial railroads. He visited the C&G for the first time in the 1960's and immediately became a devotee. The railroad published his 108-page book, *Delta Route, a History of the Columbus & Greenville Railway*, in 1981; it is now out of print. Louis is a long-time member of both R&LHS and NRHS, and is the author of more than 30 magazine articles and two books. This is his first CLASSIC TRAINS byline.

J. W. Swanberg ["The Electrics Won, but Steam Put on the Best Show," pages 18-19] is a retired railroader and a widely published author and photographer. Jack lives in Branford, Conn. This is his fourth CLASSIC TRAINS byline. ■

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True Color

Cracking the door on the Missabe

Stand with us on the old bridge over Proctor Yard above Duluth, Minn., on the Duluth, Missabe & Iron Range. The date is May 13, 1970. Although the big coaling tower still stands guard, Missabe steam has been gone for a decade, and SD9 diesels rule. They're still as-built, with high noses and a color scheme honoring the state university's maroon and gold, as well as matching the reddish hue of the iron ore that sustains the railroad. To be sure, there's some "commercial"—i.e., non-ore—business, seen in the yard at right. But there's change afoot. Note in particular the string of ore cars immediately behind SD9 118 and its sister, loaded not with raw iron ore but with grayer, pelletized ore. Taconite, they call it. More changes are ahead for the Missabe: single-tracking the main line; linking those ore cars into "mini-quad" quartets; newer SD38, then rebuilt SD45 "Tunnel Motor," diesels; a revised livery with a new "Arrowhead" emblem; the end of those yellow cabooses; sale of the Duluth-Two Harbors line to a museum for a tourist operation; the decline of the domestic steel business and ore trade; and finally, in 2004, absorption by Canadian National. But for now, in 1970, all those doors are just being cracked open.

J. DAVID INGLES

Praise from above

Your Summer 2004 issue is the closest to perfect that you've produced. Everything hit for me, and I can't tell you how long I spent poring over the Chicago Bird's-Eye View [pages 40-45].

Jerry Weisman, Los Angeles, Calif.

Capital memories

Many thanks for the fine article on Union Station in Washington D.C. ["North Meets South," pages 20-29]. The photos taken about 1955 coincide with when I rode through in the cab of a Baltimore & Ohio passenger train. I was 15 years old and escorted by my uncle, R. P. Coulson, a long-time engineer for the B&O. We boarded in Baltimore, got up to speed, and hit a thunderstorm head-on with 70 mph winds. At Union Station, I met other crews and was invited to sit in a Pennsy GG1.

Ron Hash, Bethania, N.C.

On weekends my dad would take my younger brother and me to a parking lot on Washington's New York Avenue that paralleled the B&O and Pennsy main lines at Ivy City, just to watch trains. Steam locomotives were still in use when we first went there, plus the magnificent GG1 electrics.

I must mention the T Street bridge, the only one in the District of Columbia on which it was legal to pick up or discharge passengers from a motor vehicle. At the left edge of the top photo on page 26 you see a building in the midst of the yard. This building—the Pullman Company's service facility for sleeping cars—was connected to the T Street bridge. Pullman built the bridge and donated it to the District, provided that the District maintain it and allow Pullman employees to use it going to or from work.

Robert S. Embrey, Leesburg, Va.

If your map on page 25 is accurate, trains trying to get to Alexandria on the B&O line running along the east bank of the Anacostia River would wind up the same as the runaway GG1 did in Union Station. As a kid I lived at 14 Cargo Green in southwest D.C., and there was a gate in back of the house where the track entered a Government facility. No way a train could get to Alexandria un-



NKP: JOHN B. CORNS COLLECTION

less it was an amphibious Navy SEAL.

Keep confusing our enemies. I much appreciated this issue.

Dennis Aruta, Long Island, N.Y.

¶ *B&O freights reached Alexandria via PRR trackage rights on the west side of the Anacostia River.—R.S.M.*

Boxcar-building

John Corns' "Building a Better Boxcar" [pages 56-63] reminded me of an article in an August 1977 model magazine showing a prototype carbuilding competition sponsored by the Delaware & Hudson in 1924. Three teams raced to build a boxcar in a day; the winning team did the job in 6 hours 30 minutes, including painting! Photos were taken at 1 hour intervals to record progress.

George Goeppner, Orland Park, Ill.

¶ *Indeed, it was in our own August 1977 MODEL RAILROADER [pages 79-81], with photos from the collection of Jim Shaughnessy. The hometown Oneonta (N.Y.) shop team beat out groups from Colonie, N.Y. (6:47), and Carbondale, Pa. (7:20), in building a 38-foot steel-underframe, wooden-sided car.—J.D.I.*

There is an error in the caption for

This photo (same brakeman, Howard Don, same boxcar) graced NKP's 1946 annual report cover.

the photo on page 63 in my story. The caption attributes that photo as also being used on the cover of the Nickel Plate's 1946 annual report, whereas the photo actually used on that cover was this one [above].

John B. Corns, Coshocton, Ohio

Wrong Daylight

I think Southern Pacific 0-6-0 1278, the San Francisco station switcher in the photo on pages 50-51 ["Photo Section"], is making up the *Noon Daylight*, No. 96, not the *Morning Daylight*, No. 98, because 98 did not carry baggage cars in the consist in 1941 and used a combination coach-baggage car. Also, in the background are gray baggage cars used on the *Lark*, No. 75, and 98 left before 9 a.m. when the *Lark* was due in.

Bob Madsen, Pleasanton, Calif.

Burlington: a first-class railroad

I really enjoyed "Thank You, Q" by Bob Jack in "The Way It Was" [pages 86-89], and I thoroughly agree with his assessment of the way the Burlington phased out steam.

I took many photos (in addition to

the one you published) of Burlington steam as it was being phased out, and seldom did I ever see a locomotive that didn't appear to be in first-class condition. In my opinion, the Burlington was the epitome of a first-class railroad.

I wonder when Mr. Jack saw 3012 on the stock extra at Kewanee; I have a slide of sister 4-6-4 3003 hauling stock cars through nearby Wataga, Ill., in October 1954, and I wonder if his experience might've been at the same time.

Robert Milner, Arkansas City, Kans.

Grand Trunk Western enlightenment

Thanks to Jerry Pinkepank for his great article on Grand Trunk Western ["GTW: Without Doubt, a Separate Personality," pages 14-17]. It was very informative regarding GTW's passenger operations.

Allow me to clarify things on the Durand-Muskegon line, which GTW itself didn't abandon. Rather, the line was sold, along with the Durand-Saginaw line, to Central Michigan Railway, which abandoned the Muskegon line west of Owosso in the early 1990's. Farther west, the Grand Rapids-Ionia segment is owned by Grand Rapids Eastern, and the Grand Rapids-Coopersville segment by Coopersville & Marne, which has a tourist operation. In Muskegon proper, much of the former GTW property is owned by Michigan Shore Railroad.

David Cenci, Peck, Mich.

Author Pinkepank makes reference to three GTW carferries. All were built by Manitowoc (Wis.) Shipbuilding Co., and were: *Grand Rapids 226*, in service 1926-75, then in non-transportation use and scrapped at Port Maitland, Ont., in 1994; *Madison 227*, in service 1927-76, then in non-transportation use and scrapped in the same place and year; and *City of Milwaukee 262*, in service 1931-79. The latter was sold in 1979 to the Ann Arbor Railroad, then to the State of Michigan in 1984, and then to the City of Frankfort, Mich., for \$1. It was later re-sold to SPCM Historical Society for \$1, and in 1991 it was designated a National Historic Landmark. In 2003 it was towed to Manistee, Mich., for use in a marine and motel complex.

John H. Wilterding Jr., Algoma, Wis.



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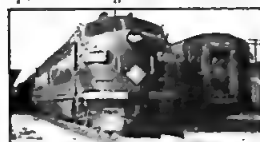
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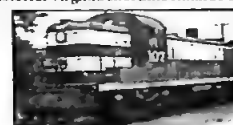
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Clinchfield capers

I really enjoyed the Clinchfield story ["One Day at . . . Erwin, Tenn.," pages 64-67], in which Dave Ingles mentioned the Smoky Mountain Chapter, NRHS, excursions from Knoxville, Tenn., to Appalachia, Va., in 1965, when he met David DeVault and Ken Marsh. I was a 12th-grader at Appalachia High School at the time, and photographed the Saturday train before it left town on the return trip to Knoxville.

Of course I didn't know any of those three men then, although all have since become friends. Ingles was quite right, though, in saying that any excursion during the D. W. Brosnan era on the Southern was rare, and the presence of an FP7 in Appalachia was a signal event.

Ron Flanary, Big Stone Gap, Va.

Your Summer 2004 issue looks like another gem in a long series of CLASSIC TRAINS gems. The magazine is a great new dimension for the railroad press, because as the years go by, I reflect and enjoy more and more "the way it was" rather than "the way it is."

I was glad to help Dave Ingles out with his "One Day at . . . Erwin, Tenn.," but as usual, we picky railfans have examined closely the text, and his nice slides, and I have found a couple of gremlins. In the first caption, since Fordtown is north of Johnson City, the cars are clearly a Kingsport set-off.

Also, Clinchfield had six switchers (350-355), not five, for a total of 66 units before secondhand and second-generation units began to arrive. The switchers were delivered in July 1950 to dieselize the Erwin, Johnson City, and Kingsport switching operations. Finally, now that I've looked at the photo of the 807 South, it might be No. 94 running late or No. 26 with a Miller Yard pickup off the L&N via the Interstate Railroad—it really is hard to say for sure.

C. K. Marsh, Jr., Kingsport, Tenn.

Orange juice: a welcome relief

The "Welcome to Florida" photo with Florida East Coast's *City of Miami* on page 53 was a pleasant surprise. I have not thought for many years of a similar incident I was part of. It was June 1942, and I was on a rickety all-wooden-coach

passenger train, part of a group of new sailors who had originally boarded a classy New Haven train in Boston, and ended up on this relic not far from the Marine base at Quantico, Va. We were on our way to Jacksonville (Fla.) Naval Air Station.

Our train's sick steam engine finally died in Savannah, Ga., so we were herded to one end of the station yard; our conductor stayed with us while we waited for a replacement engine. We soon saw a locomotive coming toward us from the other end of the yard. Suddenly it lurched to one side and stopped—yes, it had thoroughly derailed! After talking to the engine crew, the conductor told us it would be about 8 hours before we could re-board our train.

So off we went to downtown Savannah, which was engulfed in intense heat and humidity. One of the first places we spotted was a narrow store whose sign read, "Fresh Ice Cold Orange Juice." Boy, did that sound good. No booths, tables, or stools—just a long counter with two orange-squeezing machines and bins piled high with fresh oranges. We all stayed there long enough to drink many glasses of that heavenly refreshment, just like the railroad employees in Fraser Hale's photo. We then wandered all over downtown, bought lunch on our own, and went back to the station. The train left late in the evening—we'd been stalled in Savannah for 13 hours!

Glenn E. Owens, Marlborough, Mass.

Kings still reign

I was very interested to see the photo of the Great Western Railway *King* class 4-6-0 on the B&O in 1927 ["Classic Year, 1927," pages 80-81].

Your readers may be interested to know that this locomotive still exists in the Great Western Museum in Swindon, England, complete with the bell presented by the B&O which it carried throughout its working life. The locomotive was retired in 1962, then overhauled in 1971 and put back to work on railfan trips during the 1970's and '80's.

There were originally 30 engines of this class, all named after English Kings, and two others survive: No. 6024 is nearing the end of an overhaul and will then work further railfan trips,

while 6023 is at the Great Western Society's base in Oxfordshire undergoing long-term restoration to working order.

There is a growing following for U.S. railroading in the UK, no doubt assisted by your excellent publication.

John Barrance
Wing, Buckinghamshire, England

Many miles for a nickel

Thanks for bringing back fond memories of the Third Avenue El ["Third Avenue Line: Last El in Manhattan," pages 90-91]. I rode many times in the head car on the Gun Hill "through express" in the Bronx to City Hall on the two-way middle track, a distance of about 15 miles . . . all for 5 cents!

Joseph S. Cornillow, Lynbrook, N.Y.

A counselor steps forward

In his article on the Rutland of 1952 ["Deepest Twilight" on the Rutland," in "The Way It Was," pages 82-85] author Bruce W. Beardsley says he was age 9 at the time. This means he would have been a "midget" camper at Abnaki, which means I may have been one of his counselors. As I recall, there were only two "midget" cabins; mine was the one nearest the administration building.

I too, was a Rutland fan and did memorable things that summer of '52, even running a 200-class RS3 at Alburgh, Vt., on a day off from camp duties. Thanks for the fine memories!

Paul Ziesmer, Swanzey, N.H.

Boonton, not Denville

With regard to my shot of the Delaware, Lackawanna & Western Train Master in "Photo Section" on the bottom of page 46, I need to make a correction to the caption. The shot was not made at Denville but at Boonton, from Fanny Road bridge. Train 1028 was running on the normally westward track 1, apparently owing to trackwork on track 2. At the time of the photo, I was still employed by the Lackawanna.

Jack Emerick, Rensselaer, N.Y.

Got a comment or correction? Write us at: Fast Mail, CLASSIC TRAINS, P.O. Box 1612, Waukesha, WI 53187-1612; e-mail: fastmail@classictrainsmag.com. Letters may be edited for length and clarity.

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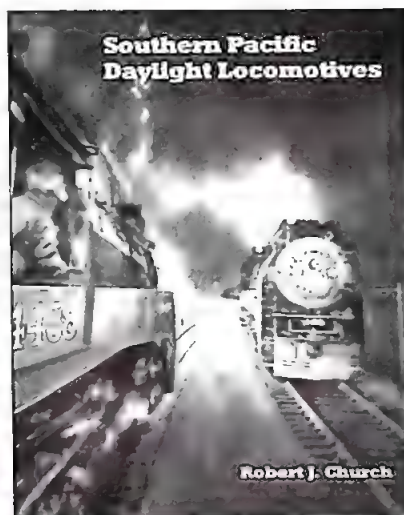
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The Delta Route: Decline, death, and rebirth

By Louis R. Saillard

How Columbus & Greenville went from bankrupt orphan to a profitable Class 1 to oblivion . . . and then came back

A VISITOR to Columbus, in eastern Mississippi, in the late 1970's would find in the Columbus & Greenville Railway a line that resembled more of a time capsule or museum than a modern working railroad. Its Class 1 heritage was obvious, and much of its business was conducted with Class 1 style. But C&G was, at heart, a homespun short line. Its shop crews labored in a 10-stall brick roundhouse and machine shop built in 1908. The dispatcher's office, in a building just west of the roundhouse, was the gathering place for hostlers and yard crews. Corporate offices, a few blocks away in a former joint C&G-Southern Railway passenger station built in 1886, were still crowded with employees shuffling papers. Just south of the roundhouse, the old car shop stood silent, its glass clerestory roof allowing light down onto two or three partially rebuilt wooden cabooses. One visitor would recall later, "It looked like the people had just forgotten to come to work one day."

The Columbus yard tracks were full of leftovers from busier times. A trailer from a 1920's Brill gas-electric, later used in maintenance service, was on hand. Old passenger cars, later used on work trains, rested on yard tracks and in a roundhouse stall. A steam pile driver, long unused, which shop employees thought had come from the Southern, stood by the turntable. C&G had purchased 300 wooden boxcars from American Car & Foundry in 1929, and in 1970 still had 56 of them on the roster, stored on sidings all along the line.

By 1975, though, this Columbus & Greenville Railway was the second carrier of that name, operating the same property as the first one, a 168-mile line across Mississippi from the Alabama state line "Thru The Heart of Dixie" (as stated on C&G's 40-foot green boxcars) to the Mississippi River at Greenville.

The oldest part of what would become the C&G was originally the 3-foot-gauge Greenville, Columbus & Birmingham, which drove its first spike near the Mississippi River on January 5, 1878. Built to provide an outlet for the agri-



DAVID M. JOHNSTON

cultural products of the rich Delta soil, GC&B in 1878 had the highest profit-to-earnings ratio of the Magnolia State's 16 railroads.

After just three years of operation, GC&B's directors voted to consolidate their little company into what would become the Georgia Pacific Railway, a grand scheme to build a southern transcontinental from Atlanta to Texarkana, Texas, and on to the West Coast. From its earliest days the GP was owned by the Richmond & Danville Railroad.

The transcontinental plans were never fulfilled. Track from Atlanta to the Mississippi River was completed June 18, 1889, but because of the R&D's precarious finances, that date was four years after the promised completion all the way to Texarkana. Two years later, Richmond & Danville's owners admitted they were unable to service the company's large floating debt. Reorganized by Drexel, Morgan & Co., the great Southern Railway System was born from the R&D in 1894.

Mississippi's Constitution of 1890 required that railroads be incorporated in that state, so the new entity for the cross-state route became the Southern Railway Co. in Mississippi. Lacking on-line industry and a western connection across the river, the SRinM wobbled through World War I and into the general economic decline which followed.

On November 6, 1920, the company

C&G's Greenwood-Columbus local, behind Baldwin 605 in original green and orange and 601 in a newer blue and white, sets out boxcars at North Carrollton, Miss., on May 1, 1981.

published a circular announcing it was changing its name to Columbus & Greenville Railroad, with the same officers. This puzzled some, but few realized at the time this was an attempt by Southern to separate its name from what was to follow. Eight months after the name change, C&G was bankrupt.

Local interests purchased it in 1923 for \$35,000 cash and changed the name to Columbus & Greenville Railway. Adam T. Stovall, the local attorney for the Mobile & Ohio Rail Road, was elected president. His son and grandson would follow him in that office.

At the time, C&G owned virtually no equipment, having for years leased it all from Southern and M&O. Stovall acquired secondhand locomotives from several sources. As the road's fortunes improved in the prosperous 1920's, it acquired an almost-new Brill Model 55 railcar (a former demonstrator, bought at a 5 percent discount). Later, new and larger Brill gas-electrics and trailers came to supplement the daily steam passenger train, the *Deltan*. President Stovall was a great believer in local passenger service (a policy he later admitted was a mistake), and through the '20's C&G continued to add secondhand cars (bought for cash) to its passenger fleet. The *Deltan* was air-conditioned in 1938.

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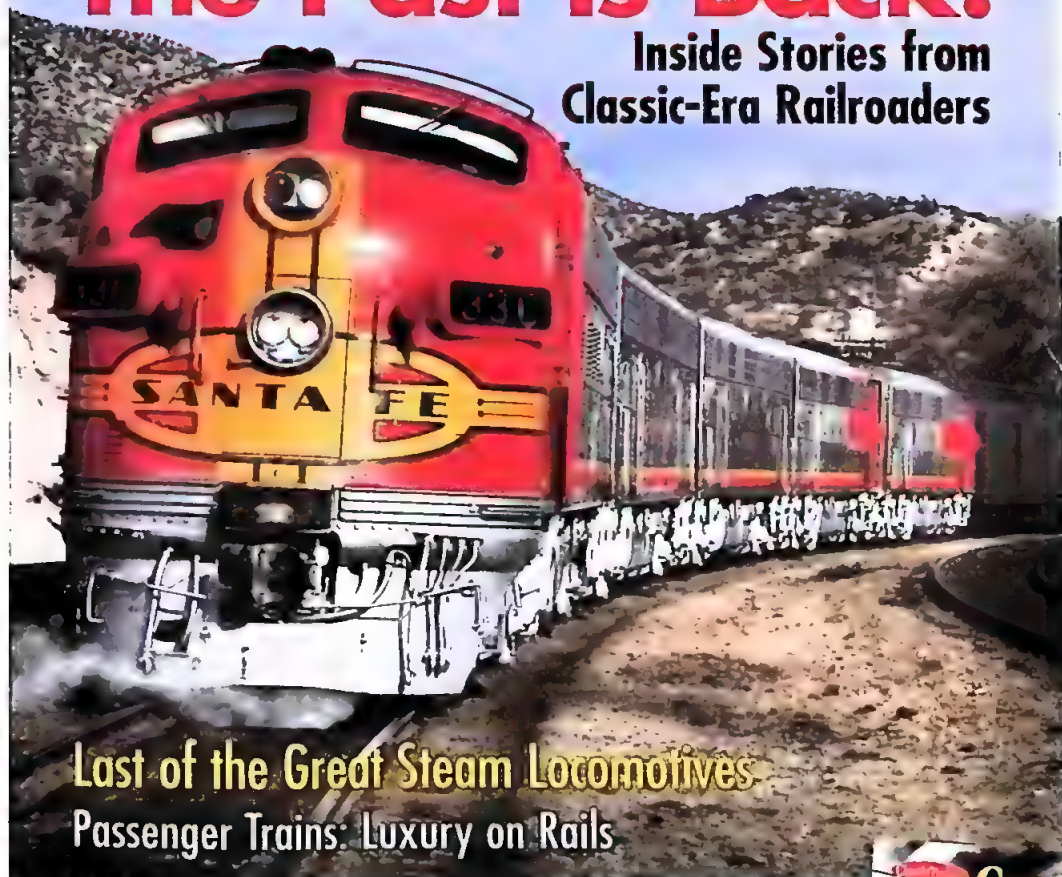
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Encouraged by its success with gas railcars, C&G as early as 1938 considered buying diesel engines. Used steam locomotives filled immediate requirements, then World War II put further purchases out of the question. In 1945, at the recommendation of C&G master mechanic W. A. Trayler Jr., the line ordered five 1500 h.p. road-switchers, Nos. 601-605, from Baldwin. These were not only the first new locomotives ever owned by the company, but 601 was the first 1500 h.p. road-switcher in America.

After some break-in problems, the Baldwins would prove to be C&G's most memorable physical asset, pulling its freight and passenger trains for 38 years. Today the 601 is displayed at

Columbus, named *W. A. Trayler Jr.*, and the 606 (bought in 1951) is at the Illinois Railway Museum in Union, Ill.

C&G passenger service ended in 1948. No. 178, an ex-Mobile & Ohio 4-6-0 that was the road's last active steam locomotive, was retired in 1951 and today is displayed at Propst Park in Columbus with three passenger cars.

The prosperous 1950's were good for C&G, and it earned a yearly profit of \$300,000 through the decade. The road was among several that lost their Class 1 status on August 30, 1955, though, when the Interstate Commerce Commission increased the required gross annual revenue level from \$1 million to \$3 million. C&G had failed to earn \$1 million for a few years during the Depression but had quickly rebounded. Now, ironically, with a consistent \$2 million in annual gross earnings, it fell to Class 2 status.

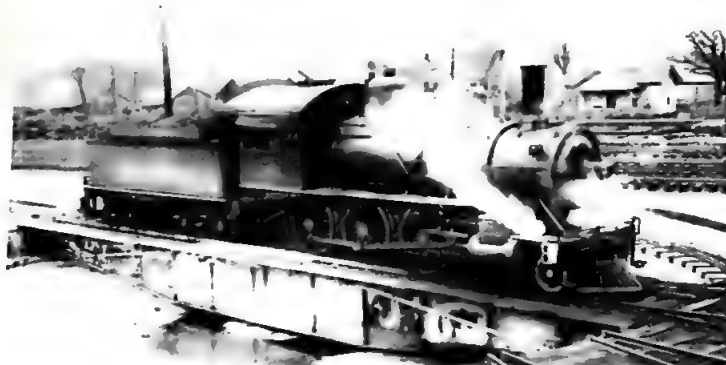
Into the 1960's C&G remained a traditional railroad. It had begun laying heavier 80-lb. rail in 1937, but much of the main line was still 60-lb. rail rolled in the 1880's (the reason why the Baldwins had A1A trucks). Then there were the cabooses. One observer in the '60's

said C&G's wooden cabooses were "better than any museum cabooses I've seen." They were mostly ex-Southern (two were from M&O), bought by the SRinM in December 1915. The oldest reportedly dated from 1894.

The classic wooden cabooses were replaced with ex-Illinois Central steel cars in 1970, and there were obvious advantages. A passenger on wooden caboose 503 in 1969 had reported the old cars "were fairly open inside, and you could sit at one end and watch the other end twist as you went down the track." Two years after the steel cars arrived, a rail broke under a freight near West Point, rolling the caboose onto its side and seriously injuring conductor Bob Gray. Had the wooden cars still been in use, Gray believes the weight of the trucks would have crushed the carbody and he wouldn't have survived.

In 1965, C&G bought two new 1800 h.p. SD28 road-switchers from EMD (which built only four others, for Minnesota's Reserve Mining) to provide higher horsepower for through freights 51 and 52 and to compensate for the loss of Baldwin 602, which had derailed

C&G through the years (clockwise from below):
The 216, a former Mobile & Ohio 1899 Rogers 4-6-0, rides the Columbus turntable on March 12, 1944, two years before being scrapped. C&G's 50 50-ton-capacity 1957 Pullman-Standard boxcars were painted green. Caboose 506, earlier Southern X-1323, began service out of Columbus in 1915, is pictured in 1966, and was not retired until 1970. The 702, one of two green-and-white SD28's, was 3 months old in December 1965.



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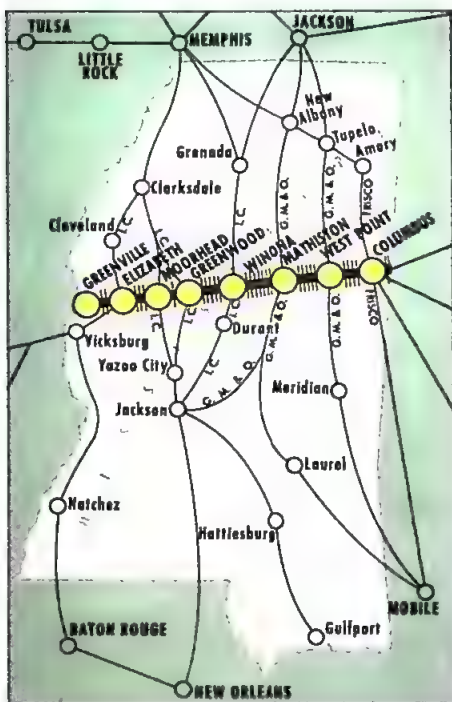
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into a creek near Maben and was retired in 1961. C&G's newest items, SD's 701 and 702 possessed one heartwarming attribute: tiny 1000-gallon fuel tanks to reduce their weight. The rest of the space below the frame, usually occupied by a larger tank, was fitted with a metal basket, in which C&G stored wooden blocking, tools, and re-railing frogs to clean up derailments, speaking to C&G's true homespun status.

On May 16, 1968, Mississippi's two largest railroads—Illinois Central and Gulf, Mobile & Ohio—announced plans to merge into the new Illinois Central Gulf. C&G interchanged with IC and GM&O at nine points, and its predicted loss in revenue from the merger was \$232,000 a year, or 14 percent of its income. Two other Mississippi short lines, the Fernwood, Columbia & Gulf and the Bonhomie & Hattiesburg Southern, predicted a loss of 59 percent.

C&G agreed in 1969 to not oppose ICG if the new firm would buy C&G for a mutually agreeable price. But the merger was actively opposed by several roads. Negotiations dragged on longer than expected, and while C&G's fate hung in limbo, tragedy struck it twice. President R. C. Stovall (son of founding

president A.T.) was killed in an auto accident in 1970, and in December 1971 the SD28's hit a gravel truck at Kilmi-chael and were seriously damaged (IC would repair them at Paducah, Ky.).

It was obvious to most everyone that Columbus & Greenville was too fragile to last. ICG became a reality on August 10, 1972, and in accordance with its agreement, bought the C&G on September 29. The new road's priorities lay elsewhere, though. The old C&G rapidly declined, and customer service plummeted. Spring floods in 1973 closed the line in several places, and ICG made no repairs. When on-line customers filed complaints with the Mississippi Public Service Commission, ICG suggested perhaps they would be better served by an independent short line.

Thus was the Columbus & Greenville Railway re-chartered and re-purchased, by local interests, on October 29, 1975, 37 months after C&G's initial demise. ICG kept the SD28's, so the new C&G had to rely on the Baldwins, four of which would last until 1983. Further C&G diesel purchases would be from the secondhand market.

Today the "new" Columbus & Greenville still serves Mississippi. Certainly the property is a short line, having long dispensed with Class 1 methods of doing business. A visitor in, say, 1970, would have looked over C&G's Baldwins, frail track, and many bridges and proclaimed the road's chances of survival in "ICG's state" as zero. Happily, he would have been wrong. ■

C&G fact file

(comparative figures are for 1930 and 1972)

Route-miles: 168; 168

Locomotives: 30; 14

Passenger cars: 25 (includes 3 motor cars, 3 trailers); 0

Freight cars: 380; 193

Headquarters city: Columbus, Miss.

Recommended reading: *Delta Route, A History of the Columbus & Greenville Railway*, Louis R. Saillard (C&G, 1981); "The Railroad That Keeps Ringing Doorbells," Dibrell Duval (September 1958 *TRAINS*); "Resurrection on the Delta," Jim Boyd (Winter 1974 *Railfan*).

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The electrics won... but steam put on the best show

THIS PHOTOGRAPH of two Virginian Railway coal trains is uncaptioned, but it nonetheless tells a story. The laboring steam locomotive is running "wrong main," with white flags denoting an extra, or non-scheduled movement, whereas the train at left is apparently moving in the same direction but on the "normal" main track, with EL-3A electric locomotives pushing on the rear ahead of the caboose.

Closer examination confirms that something out of the ordinary is going on. Four men are riding the front of the big 600-series AD-class compound 2-8-8-2, and more men can be discerned on the head end of the "Squarehead" electric pusher set, as well as on top of the caboose—despite the 11,000-volt catenary above their heads.

A little research indicates the location to be Covell, W.Va. H. Reid's book *The Virginian Railway* (Kalmbach, 1961) notes that VGN's electric freight operations began in fall 1925. Perhaps this unusual photo illustrates the "steam-electric duel" Reid describes on page 80. He gives no date, but he says, "They took a USRA Mallet, attached 6000 tons behind it, and added a pair of 2-10-10-2's behind all that. Just for the sport of it, they gave the coal-

burners a 15-minute head start . . .

"An electric team with identical tonnage and one pusher easily overtook the steamers within 15 miles. The EL-3A's scored at 14 mph on the 2.07 percent grade. [The] steamers sloughed along at 7 mph."

An inconsistency is that Virginian's AD-class Mallets were not USRA locomotives, having been built by Alco's Richmond Works in 1912—before the USRA era. Sadly, Reid is no longer with us to ask, but he did not specify the engine number in his description of the steam vs. electric contest. Virginian's USRA articulateds were also 2-8-8-2's like the AD's, so the photo may yet illustrate that duel. I would bet there might be a Virginian expert out there who can enlighten this Yankee.

In any case, it was inevitable that the Squareheads would come out ahead—the steam locomotive's 7 mph pace is hardly enough to ruffle its clean white flags. But look at that majestic smoke plume, and imagine the great sound show being enjoyed by the riders on the AD's front end.

"Win, Place, and Show": The electrics won, but one look at this photo leaves no doubt as to which locomotive put on the best show.—J. W. Swanberg

J. W. SWANBERG COLLECTION



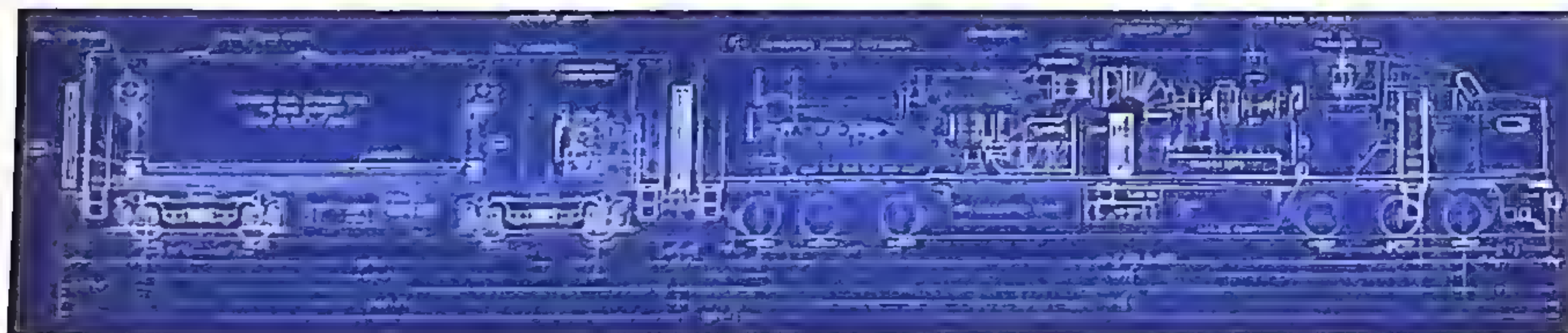




FRED KERN PHOTO; AL CHIONE COLLECTION

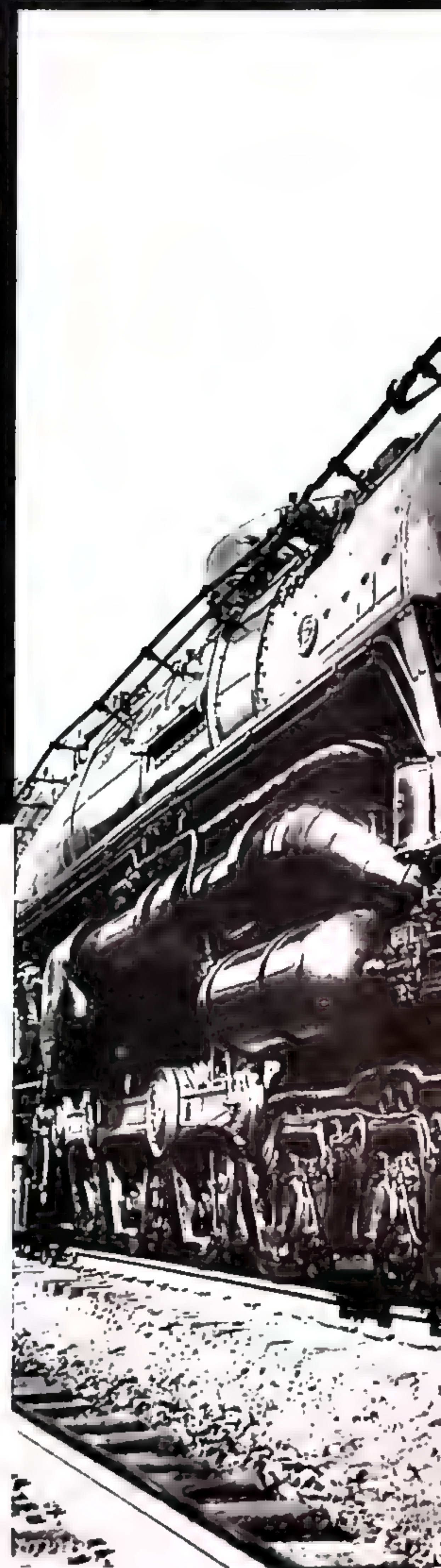


BARNEY L. STONE PHOTO; KRAMBLES-PETERSON ARCHIVE COLLECTION



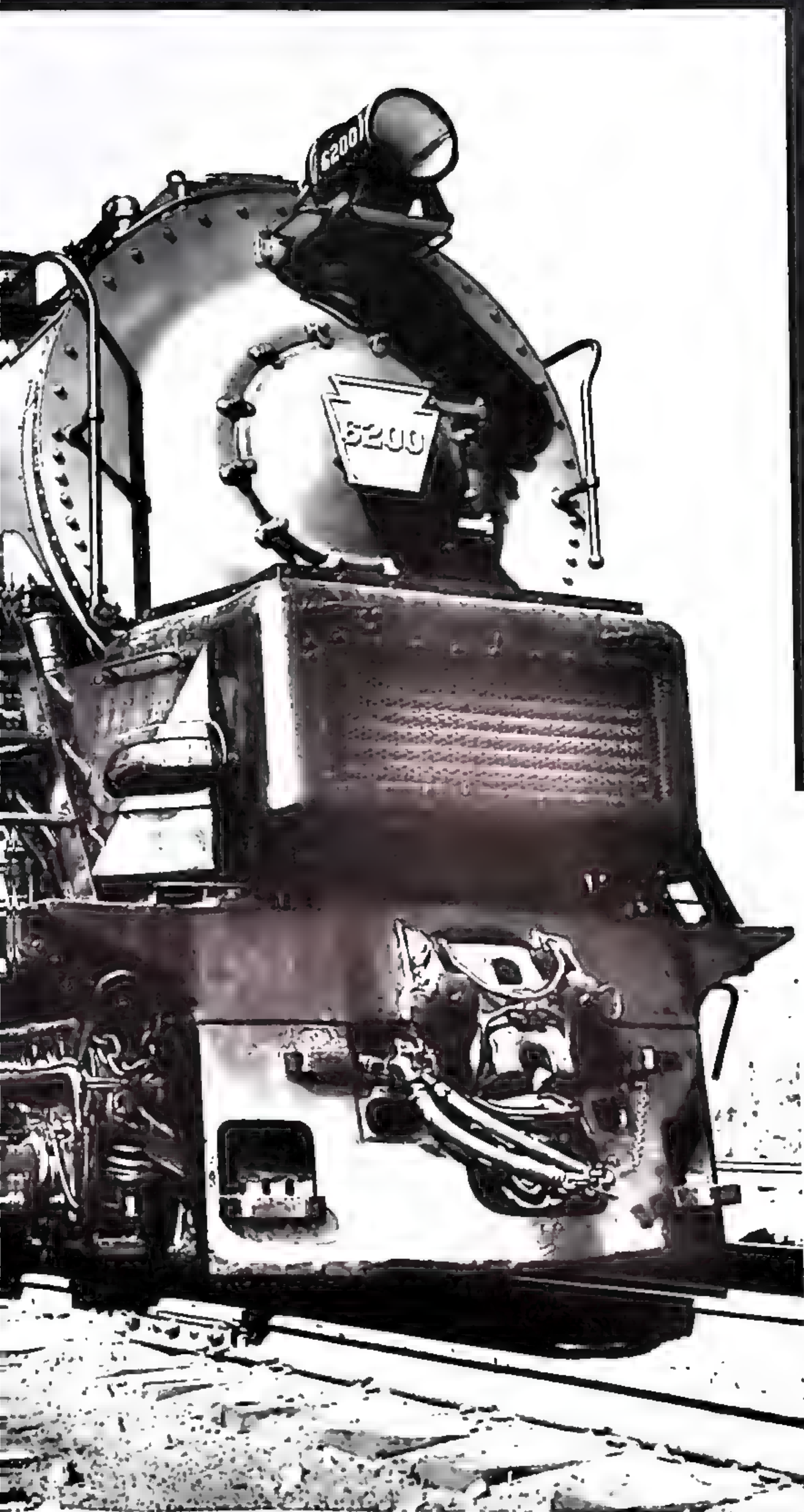
CLASSIC TRAINS COLLECTION

Coal-burning turbine locomotive designs took three basic forms. Pennsy's S2 (right) was essentially a conventional steam locomotive with a direct-drive turbine instead of cylinders, pistons, and main rods. N&W 2300 (top) and the C&O 500's (middle) had boilers, steam turbines, and electrical generators in their carboodies and diesel-style traction motors. An Alco concept that never got off the drawing boards (above) generated electricity with a gas, not steam, turbine fueled by pulverized coal carried in a tender behind the locomotive. All fell before the diesel juggernaut.



With oil-burning motive power taking over fast in the 1940's, a group of railroads, suppliers, and mining companies mounted a valiant effort to retain coal as the king of locomotive fuels

TURBINES



PRR

King Coal's battle against the diesel

By Eric Hirsimaki

UNDOUBTEDLY the greatest disappointment in the 20th century for the coal industry and coal-hauling railroads was the conversion of America's railroads to diesel-electric motive power. This change cost the industry about 23 percent of its market and substantially reduced the amount of coal hauled by rail. Therefore, it's not surprising that the coal-hauling railroads and larger coal companies tried to combat dieselization. Individual railroads and suppliers were at the forefront of this effort, though in one instance they joined forces with the coal industry in an attempt to develop the ultimate coal-burning locomotive. This alliance was the Locomotive Development Committee of Bituminous Coal Research, Inc. Its focus was on the coal-fired gas-turbine locomotive.

THE BASICS: TURBINE PRINCIPLES AND LOCOMOTIVE TYPES

A TURBINE IS A POWER PLANT that transforms the energy contained in a working fluid under pressure into useful energy by passing it through blades affixed to a central rotating shaft. A compressor is usually mounted on one end, with either a mechanical transmission or electric generator on the other. Turbines are sophisticated pieces of machinery, though they're founded on very basic principles of science and are mechanically much simpler than internal-combustion engines.

Turbines in locomotives are categorized by the type of working fluid they employ, either gas or steam. The choice of fluid assumes an important role in determining many of the remaining design parameters. While a steam turbine obviously uses steam as a working fluid, gas turbines can use one of several types of gas ranging from helium to common air.

The most important consideration after the working fluid is whether to employ an open or closed cycle. A closed cycle cools the fluid after it passes through the turbine for reheating and reuse; an open cycle exhausts it into the atmosphere. The former is best suited for steam turbines and stationary and marine applications where weight and space aren't a consideration. The open cycle typically employs air or another cheap fluid. A locomotive's space limitations usually dictate an open cycle.

Whether the fluid used is steam or gas, it must be delivered to the turbine at high pressure and temperature. The manner in which this is accomplished constitutes the greatest difference between the two types of fluids. Steam turbines use boilers, while gas turbines use a variety of methods to

obtain the desired temperature and pressure.

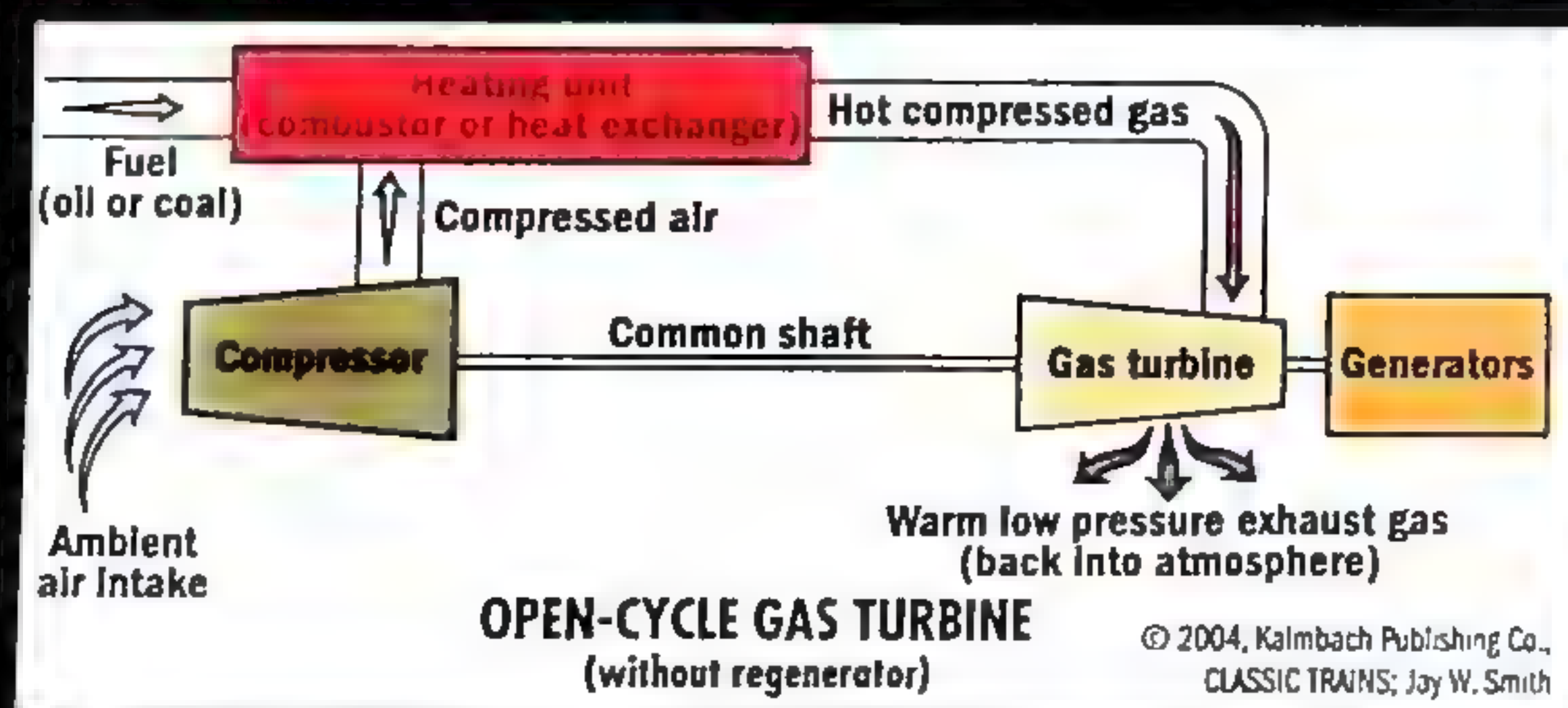
For a gas turbine using air as the working fluid, the proper pressure is obtained by passing it through a compressor mounted on the same shaft as the turbine. The compressor has an extremely high power requirement. A 12,600 h.p. turbine, for instance, uses 8400 h.p. to operate the compressor, leaving only 4200 h.p. to power the locomotive. The pressurized air, at 50 to 75 psi, is then heated by either a heat exchanger or combustor. A heat exchanger heats the air without exposing it to the products of combustion, though this system has a lower thermal efficiency than a combustor.

The preferred way to heat air is with a combustor. The air is divided into two parts; most passes around the combustor to cool it, while the remainder passes through it. (If all the air passed through the combustor, the speed and completeness of combustion would be reduced because of the large amount of cold air.) Fuel is injected into the air entering the combustor and the mixture ignited. This very hot air then mixes with the coolant air (which itself has been warmed) at the end of the combustor, so that the combined air stream is at the desired working temperature. To help the combustor perform its function, and to reduce fuel costs, a regenerator is often used. It's similar to a heat exchanger except that waste heat is used to heat air entering the cycle, much like in a feedwater heater on a steam locomotive.

The fluid temperature is another important parameter. The higher the temperature, the better the results. This is why a steam turbine's thermal efficiency is lower than a gas turbine's. Steam can be heated only to specific limits, while a gas can be heated to almost any temperature. Actually, it's not the temperature itself that's important, but rather the number of British thermal units (Btu's) available for work. The higher the temperature, the more Btu's and, hence, the more work a turbine can do.

That's the main advantage of gas turbines: they operate at higher temperatures than any other form of motive power. It also explains why the gas turbine is a relatively recent development; gas turbines typically operate at a temperature of over 1250° Fahrenheit, which was beyond the capabilities of

A schematic diagram (left) shows the principal elements of a gas turbine. Had the Locomotive Development Committee produced a gas-turbine prototype, it would have been conceptually similar to the diagram at right.



Of all the motive-power alternatives available in the late 1940's, none offered as much promise as the turbine. Many such locomotives were proposed by railroads and/or turbine manufacturers, yet only 10 were built, plus a single fleet of 55 for one road. Only four railroads owned turbines: Pennsylvania, Chesapeake & Ohio, Norfolk & Western, and Union Pacific. Indeed, more turbine-locomotive development work was done on paper than in cold steel, as technical problems caused the concept to fall victim to the railroads' rush to dieselize in the inflationary postwar era.

The turbine locomotive was, its backers hoped, the next evolutionary step in railroad motive-power development. Just as Lima Locomotive Works' "Super-Power" succeeded older reciprocating steam-locomotive designs and was in turn replaced by the diesel-electric, the turbine locomotive appeared to offer even bigger operating savings.

This is why, at least in some quarters, the diesel was considered only a stop-gap measure until turbine locomotives could be fully developed. [For an overview of turbine principles and their application to locomotives, see the sidebar above.]

Turbine fever spreads

The era of "turbine fever" on American railroads lasted from the late 1930's to the early 1950's. Before then, technological problems hampered development; afterward, the diesel reigned supreme. Still, within that period there appeared an astonishing number of turbine programs, several of which produced actual locomotives. Some of the nation's top corporations were involved.

General Electric, a leading supplier of turbine equipment for all applications, actively supported several steam- and gas-turbine locomotive projects. Its first turbine locomotives were also the

first ones in America, a pair of oil-fired steam-turbine-electrics built in 1938. Resembling contemporary passenger diesels, GE Nos. 1 and 2 were painted for, and tested briefly on, the Union Pacific; they were scrapped during World War II. GE worked on other turbine projects on its own account and for various railroads in the late 1930's and early '40's, though little came of them. Then in 1948 GE completed an oil-burning gas-turbine-electric demonstrator. The first truly successful turbine locomotive in America, GE No. 101 became the prototype of a fleet of UP locomotives, but after this, GE's turbine program went into limbo.

Westinghouse Electric, GE's major competitor, carried the rivalry into the turbine market. In contrast to GE, which built its own locomotives, Westinghouse teamed up with the Baldwin Locomotive Works, which did the construction while Westinghouse concentrated on research and design. Work-

metals until the 1930's. This fact, and the railroads' familiarity with steam and boilers, caused early development work to concentrate on steam turbines.

How a turbine locomotive works

In a typical turbine locomotive, either steam or gas arrives under pressure at the turbine, where it encounters alternating sets of fixed and rotating blades. The former, called stators, are mounted on the housing surrounding the turbine. The latter, termed rotors, are affixed to the rotating shaft. Each set of rotors comprises a "stage," and it's here that the energy contained in the fluid is transferred to the blades. As the fluid expands in a given stage, it imparts motion to the blades, causing them to rotate and turn the main shaft to power the compressor and generator.

After leaving a stage, the fluid is either exhausted or enters another stage. This is accomplished by having the rotors curve to the left and the stators to the right. Because the fluid's pressure drops as it expands in each stage, each succeeding stage is larger than its predecessor. Steam-turbine locomotives usually have 1 to 4 stages; gas turbines, about 15. Eventually the point

is reached where adding more stages won't obtain additional energy, so the fluid is exhausted into the atmosphere or re-enters the cycle for reuse.

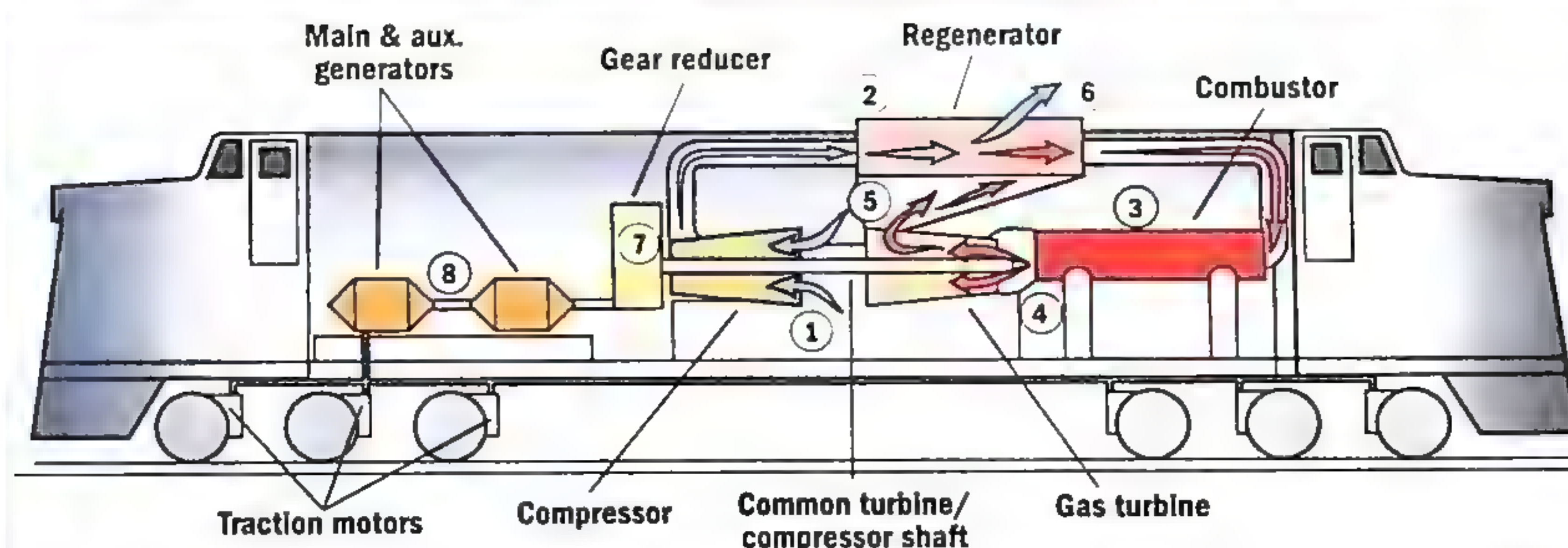
Turbines operate at virtually full speed regardless of the load being placed on them. This causes fuel consumption to be relatively high. Unless cheap fuel is used, it becomes uneconomical to use turbines in a service where they aren't worked hard most of the time.

U.S. turbine locomotive types

Steam-mechanical: Coal or oil is burned in a boiler to produce high-pressure steam. The steam turns a turbine geared directly to the driving wheels.

Steam-electric: Coal or oil is burned in a boiler to produce high-pressure steam. The steam turns a turbine connected to an electric generator, which feeds current to motors on the driving wheels.

Gas-electric: Air passes through a compressor to raise its pressure, then enters a combustor, where coal or oil is burned, raising the air's temperature. The hot, pressurized gas from the compressor turns a turbine connected to an electric generator, which feeds current to motors on the driving wheels.



TYPICAL LAYOUT FOR A GAS-TURBINE LOCOMOTIVE

1. Air enters compressor at ambient pressure and temperature
2. Compressed air is warmed by turbine exhaust heat
3. Warm, compressed air is mixed with fuel and burned in combustor
4. Hot (1350°F ±) air enters turbine
5. Waste heat at low pressure enters regenerator
6. Warm air re-enters atmosphere
7. RPM's of main shaft reduced to level generators can handle
8. Electric current for traction motors and auxiliaries generated

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ing in this manner, the team produced a succession of prototype locomotives. Perhaps more than any other company, Westinghouse was committed to the steam, as opposed to gas, turbine.

Westinghouse and Baldwin rolled out their first turbine in 1944. Built for the Pennsylvania, it was a coal-fired steam turbine with a mechanical transmission. PRR No. 6200 looked much like a conventional steam locomotive, but without cylinders and main rods—the turbines were geared directly to the driving wheels. In 1946-47 came three huge steam-turbine-electrics for the Chesapeake & Ohio, another major coal-hauler. C&O 500-502 incorporated coal bunker, cab, boiler, turbine, generator, and auxiliary equipment in a single streamlined unit, behind which was coupled a water tender. Following the same general layout was Westinghouse-Baldwin's final turbine, Norfolk & Western No. 2300 of 1954. Known as *Jawn Henry*, the behemoth was N&W's

final bold expression of faith in coal-fired motive power. Westinghouse and Baldwin left the new-locomotive field soon after this project.

In the midst of this steam-turbine work, Westinghouse also developed an oil-burning gas turbine for stationary applications. Adapted for locomotive use, it was the power plant for demonstrator No. 4000, completed in 1950. Like the GE gas-turbine prototype of 1948, it was a diesel-like unit with a standard electric transmission. It was the only Westinghouse gas-turbine locomotive.

Allis-Chalmers was primarily a supplier of turbine equipment to non-rail industries and never had many ties to railroading. Still, the company was one of the pioneers of gas turbines and became influential in various locomotive projects, although no locomotive was actually equipped with its turbine equipment. A-C's interest in turbine locomotives dated to about 1939, when

it began studying the feasibility of adapting the Houdry oil-refinery turbine to railroad use. This was one of the first efforts at applying a gas turbine to a locomotive.

A-C looked at four different proposed gas-turbine layouts, and two types of transmission: mechanical and electrical. It decided to use an electrical system to keep the prototype as simple as possible, and to later work out a mechanical transmission (although this was never done).

In 1944, A-C unveiled another proposal, this time for a passenger unit incorporating a pair of Houdry turbines and using an electrical transmission. Like other stationary or locomotive gas-turbine designs of the era, it would have burned oil, but the proposal also featured something unique—the possibility of using coal. This brief mention of coal showed that A-C knew how to strike a chord among the railroads. It helped lead to an order for a gas tur-

GENERAL ELECTRIC 1 AND 2: STEAM-TURBINE-ELECTRIC, OIL-FIRED



RICHARD H. KINDIG



WALTER THAYER

AMERICA'S FIRST TURBINE LOCOMOTIVES were completed at GE's Erie (Pa.) plant in December 1938 for testing on the Union Pacific. These were a pair of 2500 h.p. steam-turbine-electrics, dubbed "Steamotives," for use on long-haul passenger trains. Although owned by GE, Nos. 1 and 2 were designed in collaboration with UP and wore UP colors. Power was supplied to the wheels by truck-mounted traction motors, as on most diesel and electric locomotives.

The heart of each Steamotive was a standard GE single-stage, "closed-cycle" steam turbine. In the rear of each carbody was a condensing unit, which converted exhaust steam back to water for reuse in the boiler. Nos. 1 and 2 were the only American locomotives to use condensers, and the only U.S. closed-cycle turbine locomotives. Steam came from a unique boiler built by Babcock & Wilcox. It had a working pressure of 1500 psi—the highest ever in a locomotive—and was of the watertube, semi-flash type, meaning that, instead of the water boiling in the conventional manner, it would "flash" into

bine, which would be modified to operate on coal. This was the first, and last, order Allis-Chalmers ever got for locomotive turbine equipment.

The Elliott Company was involved in gas-turbine development work for the U.S. Navy during World War II, experience it hoped to use to develop a locomotive. It obtained a pair of orders for gas turbines in 1946, one to work in a coal-fired locomotive and another from the Santa Fe Railway for an oil-burning unit. Each would be housed in a Baldwin Centipede-style diesel carbody. Construction began on the Santa Fe unit, but the project was halted, and Elliott later withdrew from both efforts.

Lima-Hamilton Corp. proposed the most innovative gas-turbine design,

one that used a gas generator similar in concept to Fairbanks-Morse's opposed-piston diesel engine. The difference was the pistons would be free-floating, and both the compressed air and gases of combustion generated by the engine would be used in the turbine. The concept was seemingly very simple, though it proved hard to perfect. The Pennsylvania ordered a prototype oil-fired unit, but the project died because of technical problems and Lima's 1950 merger with Baldwin.

King Coal's best hope

Despite the time and money spent on those generally individual efforts, the best hope for the railroads and the coal industry was the Locomotive De-

velopment Committee project. The reasoning behind the formation of the LDC was simple: coal was a cheap fuel, and the combination of a turbine and coal would be highly competitive with the diesel-electric locomotive. For many years, the coal industry promoted coal consumption through an entity called Bituminous Coal Research, Inc. (BCR), which studied such topics as coal-fired home heaters, dust control, and the gasification of coal. BCR did very little work concerning locomotives—this was left to the railroads, builders, and appliance manufacturers. However, by 1943 the coal industry saw the diesel as a serious threat. Many BCR members felt it was time for King Coal to counterattack; therefore, at the group's



RICHARD H. KINDIG

steam when it encountered a sudden pressure drop. The boiler was closely patterned after stationary-plant practice.

Though large physically—each unit weighed over 500,000 pounds and was 90 feet long—their horsepower output was relatively low. One difference setting them apart from all subsequent steam turbines was the use of oil as a fuel, an indication that GE's interest lay in the turbine concept, not the preservation of coal as a locomotive fuel. At the time, it was not yet clear that diesels would completely replace steam.

After testing at GE and on the New York Central, the Steamotives went to the UP in April 1939. For two months, they ran on UP test trains and made a coast-to-coast tour to promote the Paramount movie *Union Pacific*. Deemed too complex and unreliable, they were stored at Erie in June '39. They were re-activated in 1943, when Great Northern used them in freight service in Washington. They were returned to GE in late '43 and scrapped.

Few locomotives combined heavy publicity and abject failure to the degree the GE Steamotives did. Looking formidable enough, No. 2 (above) gets a going-over at Denver on May 27, 1939. Tucked behind Virginia & Truckee 4-4-0 No. 18 made up to look like a UP engine (above left), the twins head a 15-car train at La Salle, Colo., on April 26, 1939, while on tour to promote the movie *Union Pacific*. Power-short Great Northern used them between Wenatchee and Spokane, Wash., in 1943 (left).

Road Nos.: 1, 2
Owner: General Electric
Gross horsepower: 2500
Turbine type: Steam

Transmission: D.C. electric
Fuel: Oil
Wheel arrangement: 2-C+C-2
Builder, date: GE, 12/38

1943 annual meeting, the railroad members lobbied for inclusion of locomotive development work.

The matter was tabled, but the subject came up again in a 1944 meeting. Further talks resulted in a special meeting held in New York on January 12, 1945, to form the Locomotive Development Committee of BCR. In attendance were the presidents of coal-haulers Baltimore & Ohio, Chesapeake & Ohio, Louisville & Nashville, New York Central, Norfolk & Western, and Pennsylvania, plus the presidents of BCR, M. A. Hanna Co., Island Creek Coal Co., and Sinclair Coal Co.

Also present were representatives of Purdue University and the Massachusetts Institute of Technology, to discuss

the technical details of various coal-burning locomotive proposals and their respective abilities to perform research in support of the project. No specific locomotive type was selected as the best choice to pursue, but it can be assumed a turbine was a leading candidate. The LDC was charged with choosing and developing the most promising option.

The LDC's first and only chairman was Roy B. White, president of the B&O. Though a strong proponent of turbines, White represented the railroad member most committed to dieselizing at that time. However, the B&O was a major coal-hauler and wanted to promote coal-burning motive power. A committee consisting of the chief engineers of the member companies would

provide technical guidance and staff support. First, though, they had to decide which coal-burning locomotive design offered the greatest promise.

After reviewing its options, the LDC decided little could be done to improve the conventional reciprocating steam locomotive. A steam-turbine design was considered, but was discounted because of the relatively low thermal efficiency inherent with the use of steam. A third alternative was a coal-burning gas-turbine locomotive. It would have a much higher thermal efficiency and, if several technical details could be resolved, would be a highly competitive design, thanks to the low cost of coal as compared to oil.

Conventional steam locomotives

PENNSYLVANIA 6200: STEAM-TURBINE-MECHANICAL, COAL-FIRED

THE FIRST OF SEVERAL turbine projects the Pennsy considered was also the only one that produced an actual locomotive: steam-turbine-mechanical No. 6200. PRR ordered it from the Baldwin-Westinghouse team in the early 1940's, but wartime material restrictions delayed construction and increased the weight of the design. The sole member of PRR class S2 was completed in September 1944 with a 6-8-6 wheel arrangement, rather than 4-8-4 as first planned. It burned coal, of which PRR was the nation's leading hauler.

The S2 looked much like a conventional steam locomotive, except that, instead of cylinders and main rods, it used turbines geared to the driving wheels. Steam was fed into a 6900 h.p. turbine mounted on the locomotive's right-hand side. The turbine powered a modified version of a marine gearbox driving the two center axles; siderods carried power to the outer two sets of driving wheels. This large turbine was for forward motion only; a smaller, 1500 h.p. unit on the fireman's side was used for reverse. While the turbine drive was a bold step, the S2 as a whole followed standard reciprocating steam-locomotive practice as closely possible.

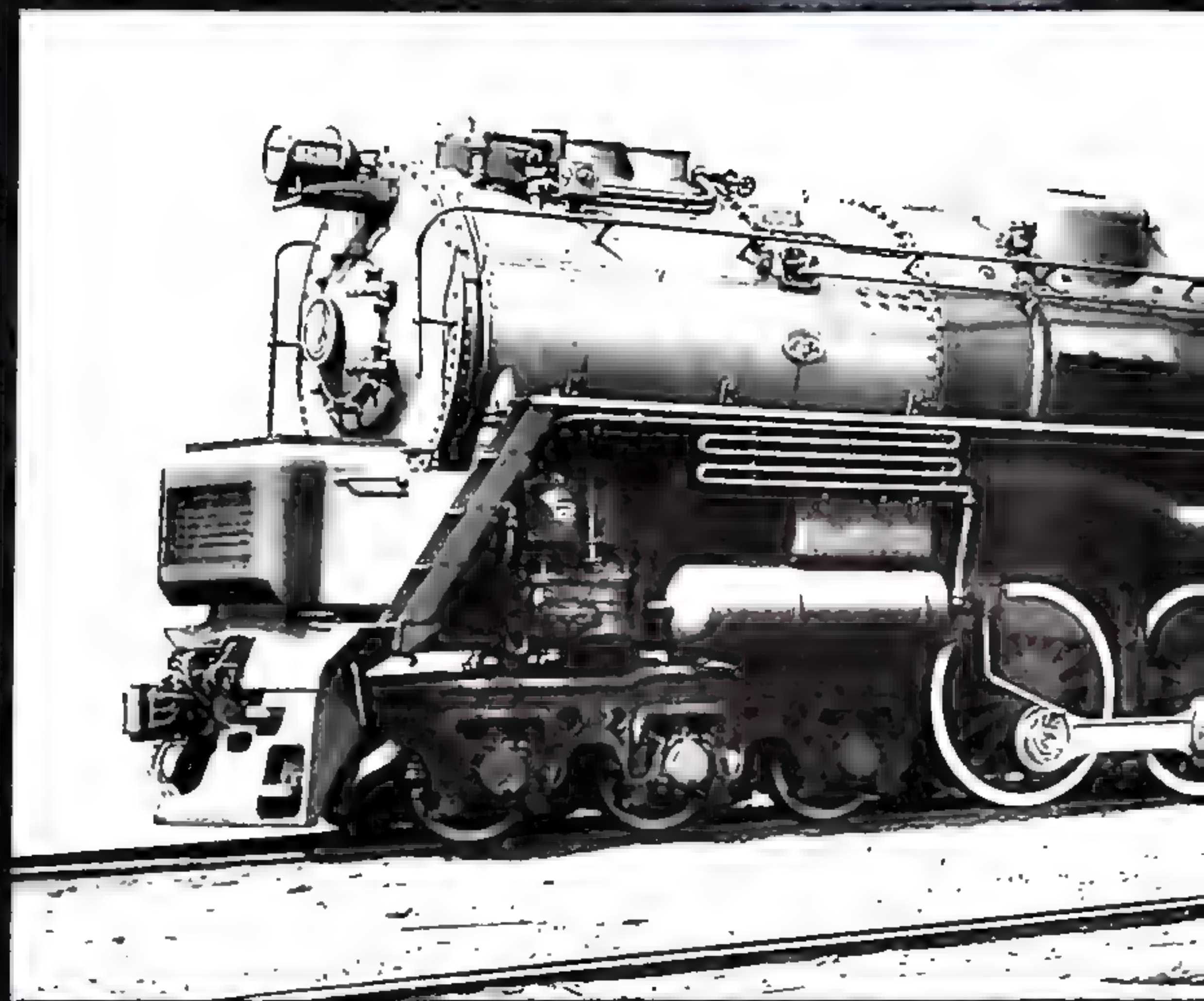
Only the barest minimum of changes were made to accommodate the turbine. The boiler, for example, was little more than a conventional firetube type with no real turbine-specific modifications, apart from a 310-psi working pressure. This was indicative of the PRR's desire to mate a regular boiler to the new turbine concept without making any allowances for the steam demand and voracious appetite for fuel that a turbine has. This was to be a large reason for the failure of all such steam-turbine designs.

This is because the steam turbine has a very low starting torque, so that it takes a large amount of steam to start such a locomotive under load. Unless the engineer is very careful, the turbine can literally use all the steam in the boiler. In addition, the turbine has a high steam demand even when the locomotive is sitting still, which meant high fuel consumption. For the best results with a steam turbine, the designers had to use a higher steam pressure than a conventional staybolted boiler could handle. It was for these reasons that such designs had little hope of success, and that many of the most knowledgeable engineers were writing off the steam turbine.

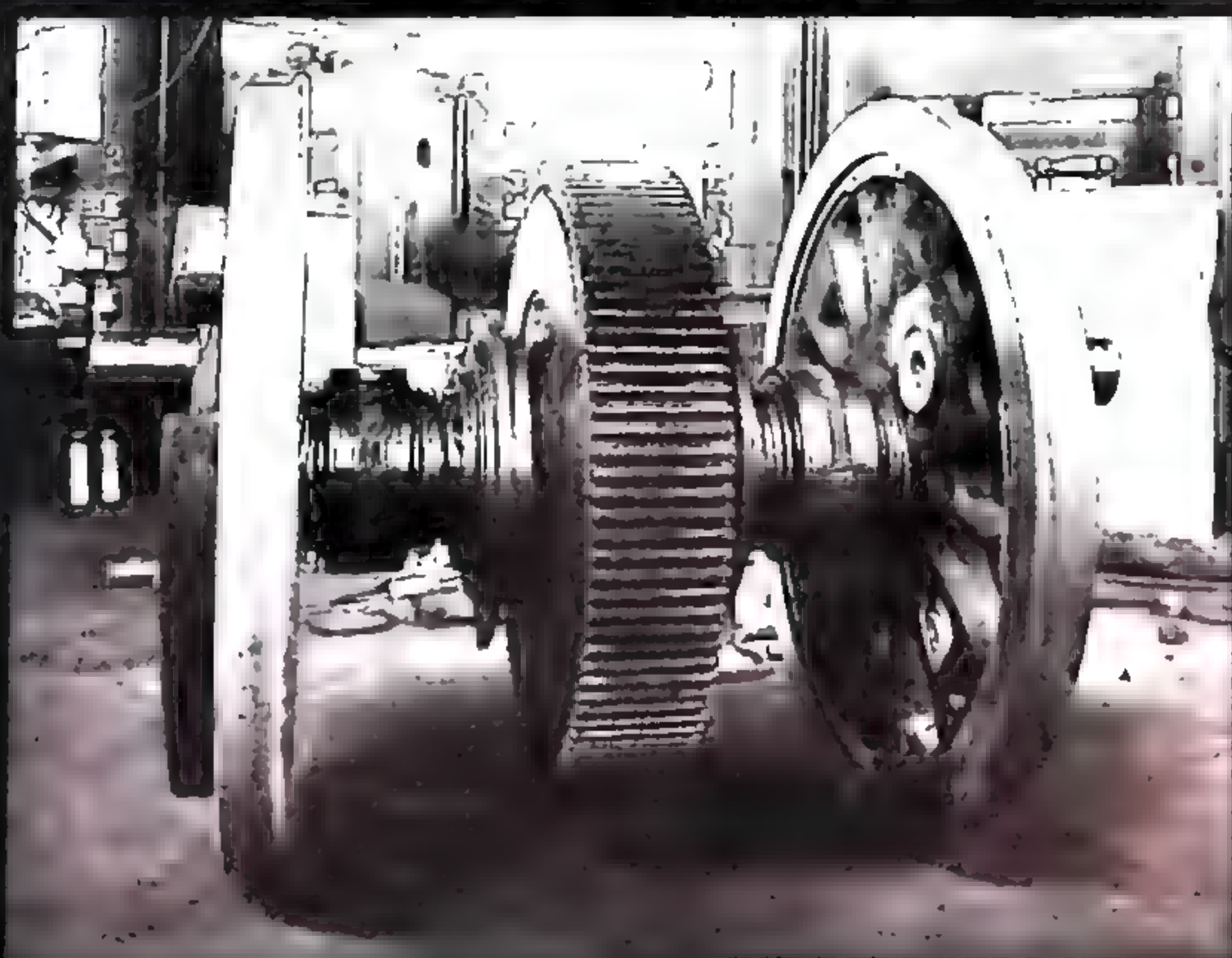
It was apparent soon after the 6200 hit the rails that it would not be worthy of duplication. While it was running out miles between Chicago and Crestline, Ohio, in the passenger pool, plans were made for a successor. By early 1945, the PRR and Westinghouse were promoting another new type of steam turbine. This was a 2-D+2-D streamlined unit having a pair of geared driver sets. It was claimed to be capable of 9000 h.p., but was never built. Meanwhile, the S2 was stored in 1949, never to run again.

Road No.; class: 6200; S2
Owner: Pennsylvania Railroad
Gross horsepower: 6900
Turbine type: Steam
Transmission: Mechanical

Fuel: Coal
Wheel arrangement: 6-8-6 (plus tender)
Builder, date: Baldwin-Westinghouse, 9/44



For a builder's photo (above), Baldwin replaced the 6200's PRR key-stone numberplate with a round plate marked "BLW" and blanked out cab and tender lettering. Six-wheel trucks were for weight distribution.



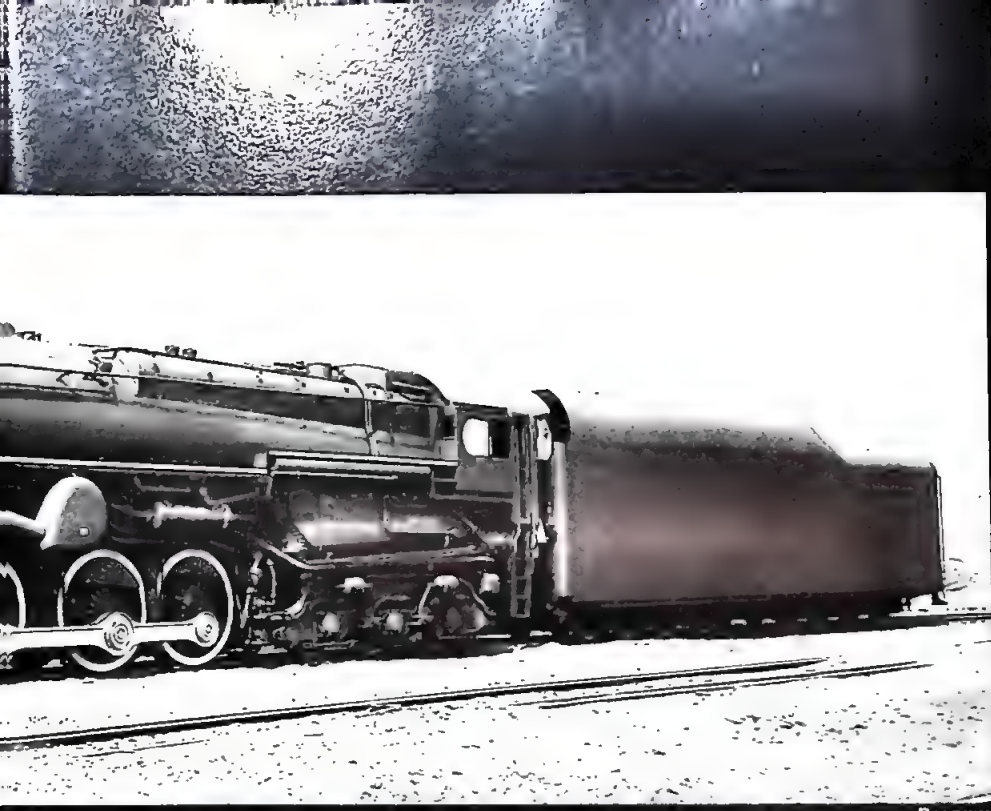
have a thermal efficiency of about 6 percent; gas turbines, 16 percent; and diesels, 22 percent. This would seem to give the diesel a clear advantage, but in 1947 diesel fuel cost more than 3½ times as much as coal. The costs per horsepower-hour for the three types of motive power were thus 5.71 for steam, 5.32 for diesel-electric, and 1.90 cents for coal-fired gas-turbine. Clearly, if a gas turbine and coal could be married in a locomotive, it would be very competitive. (Oil-fired gas turbines were

competitive only when extremely cheap fuel oil [Bunker C, not diesel] was used. The top diesel builder, General Motors' Electro-Motive Division, estimated a gas turbine's repair and lubrication costs to be two-thirds those of a diesel, further favoring the former, while the initial cost of both types were assumed the same.)

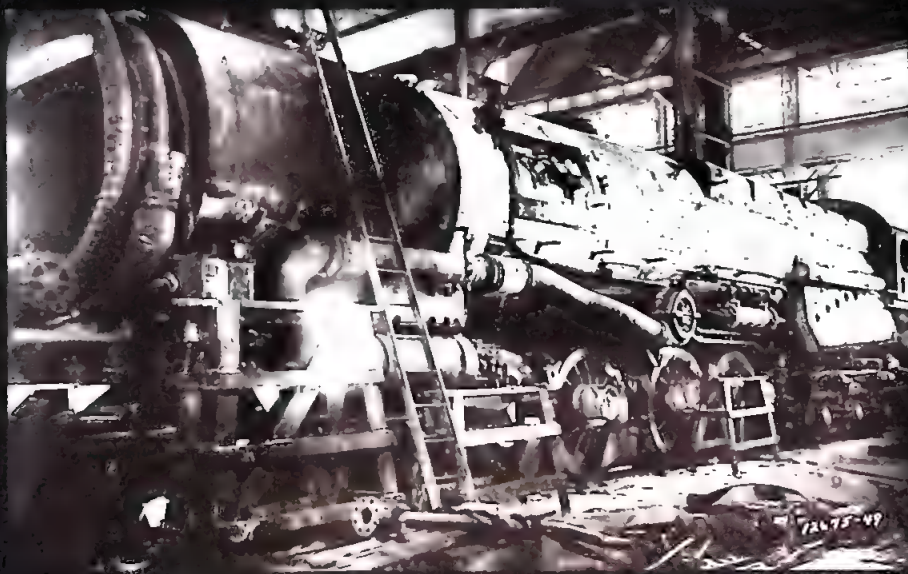
The LDC then had to decide exactly how to burn coal in a gas-turbine locomotive. There were three ways to accomplish this:

1. Using a gaseous fuel produced from coal on-board the locomotive;
2. Burning powdered coal, but this would require removing fly ash from the airstream before it entered the turbine to prevent blade erosion; and
3. Using a conventional oil-fired gas turbine, but producing the oil from coal at a lineside facility.

After reviewing the alternatives it was decided that Option 1 was the most promising, Option 2 was worthy of careful consideration, and Option 3



BALDWIN



TWO PHOTOS: PRR

Massive gears on the S2's middle two driving axes (left) transmitted power from the turbine gearbox. A left-side construction view shows the small turbine used for reverse movements.

was years away from being viable. However, the desire to expedite the research program led the Locomotive Development Committee to adopt Option 2, burning coal on-board the locomotive. The committee was optimistic, feeling the diesel was vulnerable. They called it the "orchid of locomotives," noting that it was pleasing to the eye, but had a large number of moving parts, hence it was a fragile machine at heart. On this note the matter was referred to the LDC's board.

Setting up shop

The LDC hired John I. Yellott as the project's director. He had a strong background in gas-turbine work and had just patented a coal-pulverizing device that seemed suitable for the LDC locomotive. Work began in a small office in Baltimore on May 1, 1945. The LDC's initial budget was \$1,113,262. Funding came from its member companies, whose shares ranged from about 32 percent for the Pennsy to slightly over 2 percent for other members.

The research program was divided into three key areas:

- Development of a system that could supply coal to the combustor in a uniform size at a precise delivery rate. A key component, this would prove extremely difficult to develop. Design of the coal-handling system was based on the premise, fatal in some respects, that standard locomotive coal would be used. This led to significant extra effort and expense. It probably would have been better to get an operational locomotive using whatever fuel was easiest to process and *then* try to adapt it to burn standard coal.

- How to burn the coal. Grates or a conventional heat exchanger could be used, but at a lower thermal efficiency. A combustor was preferred, but no existing design could deliver enough Btu's; either a new combustor had to be designed or an existing unit modified.

- The key to the entire project was removing fly ash from the hot gas before it entered the turbine. If this issue was not resolved, the fly ash would destroy the turbine blades.

The LDC would develop the equipment necessary to meet these three goals, while the turbine manufacturers worked on the turbine equipment.

The proposed locomotive would use an open cycle because of space limitations. About 4500 h.p. would be developed for traction using an electrical transmission, though it was hoped to eventually design a mechanical transmission. First, though, the concept had to be proven feasible. Johns Hopkins University was hired to develop a small-scale prototype incorporating several of the components under consideration. This testbed was demonstrated for the LDC board at the university on December 7, 1945, and worked well enough to encourage everyone that the project was viable.

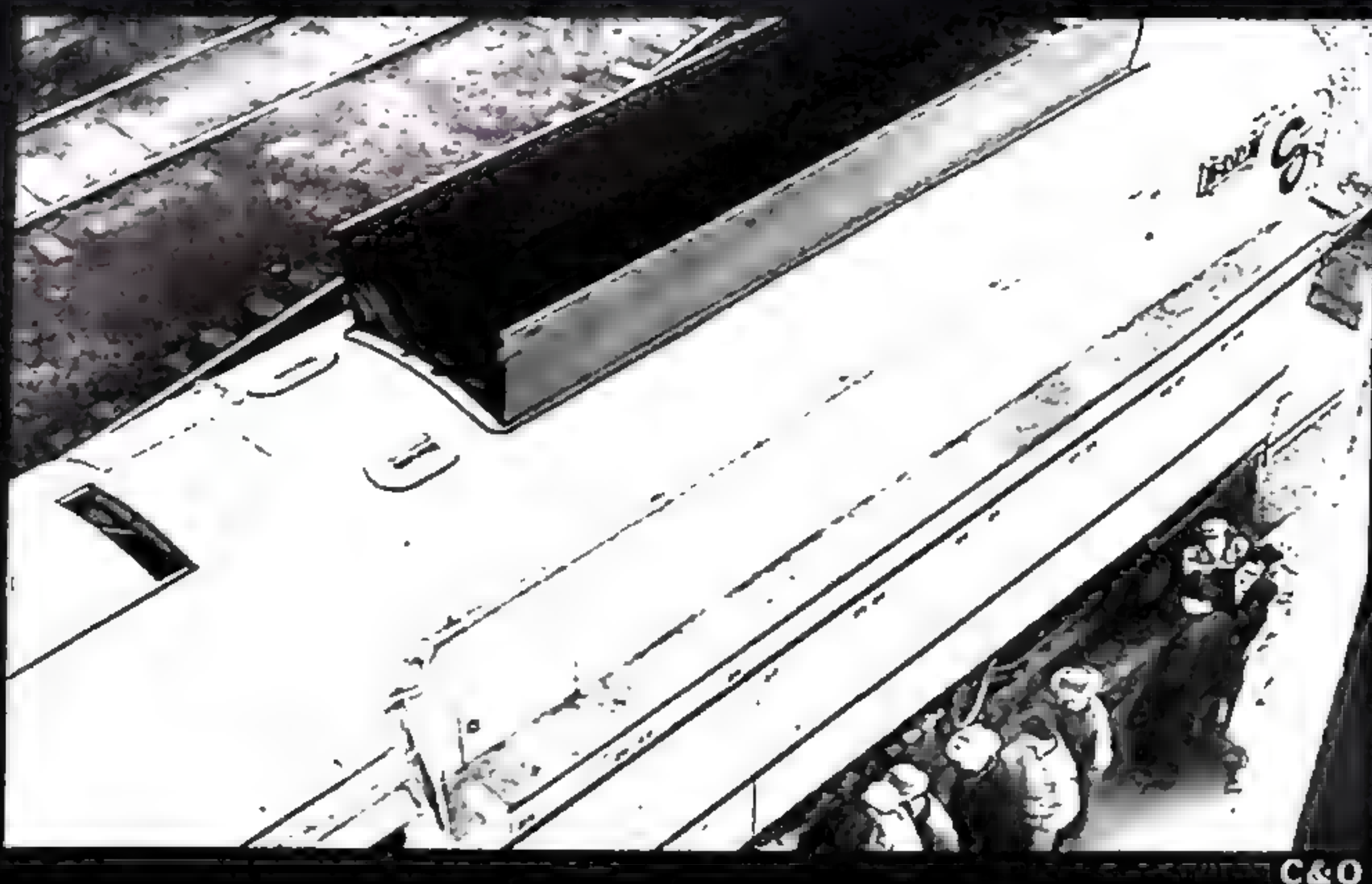
The LDC program was soon in high gear. Somewhat surprisingly, given the fact none of the supporting equipment had been developed, the LDC ordered not one, but two turbines. This was done to save time and to make two different turbine designs available for road testing. Quotations for the equipment were requested from GE, Westinghouse, the Elliott Company, and Allis-Chalmers. GE and Westinghouse withdrew for technical reasons, so orders were placed with Elliott and A-C. Each company's turbine would be substantially different from the other's.

Alco, Baldwin, and Lima were requested to provide proposals for a chassis for the equipment and assem-

CHESAPEAKE & OHIO 500-502: STEAM-TURBINE-ELECTRIC, COAL-FIRED



No. 500 at Cincinnati on September 27, 1948, shows off its massive size: 106 feet long (plus 48-foot tender), 15½ feet tall, 428 tons engine weight; C&O called them "the world's largest single-unit passenger locomotives." Doors for the 29¼-ton coal bunker (below) are open during a display stop.



NEXT TO THE PENNSY, it was the Chesapeake & Ohio that seemingly was the turbine's strongest adherent. Perhaps the highwater mark of C&O's turbine work came with the delivery of a trio of massive steam-turbine-electrics in 1946-47. Built by Baldwin-Westinghouse, Nos. 500-502 each generated 6000 h.p. through eight traction motors in a 2-C1+2-C1-B wheel arrangement. As on PRR's S2, a conventional firetube boiler of 310 psi was used to supply steam to the turbine. They presented a striking streamlined appearance but underneath the shroud was a literal maze of piping.

The 500's were part of C&O President Robert R. Young's ambitious—some would say ill-considered—plan to improve his road's passenger service. They were to power the *Chessie*, a new Washington-Cincinnati streamliner. The *Chessie* was cancelled before it ever ran, and the trouble-plagued turbines became white elephants, spending most of their time in the shop. In contrast to their high-profile arrival on the property (publicity included articles in *Life* and *Popular Mechanics* magazines, tours of the system [see page 82], and a stint at the Chicago Railroad Fair), they were quietly scrapped in 1950.

Perhaps the greatest irony of the entire C&O debacle was the fact that the road had on its staff one of the country's foremost turbine experts, Ken A. Browne. By 1945, he and his staff were favoring gas turbines, and he felt the road had made a mistake in obtaining the 500's (they had been or-

bly of the units. Each builder's proposal varied.

Alco would house the equipment in a pair of carbodies based on its PA1 passenger diesel. One unit would have the coal bunker, while the other would carry the coal-handling system, combustor, and an A-C gas turbine. Each unit would have an operating cab, with GE supplying the electrical equipment.

Baldwin proposed a double-ended, 2-D+D-2 "Centipede"-style unit in which would be placed an Elliott gas turbine,

the coal bunker, and other equipment. Westinghouse would supply the electrical gear.

Lima also suggested a double-cab unit. It would have an A-C turbine, Westinghouse electricals, and an unusual B1B-B1B wheel arrangement.

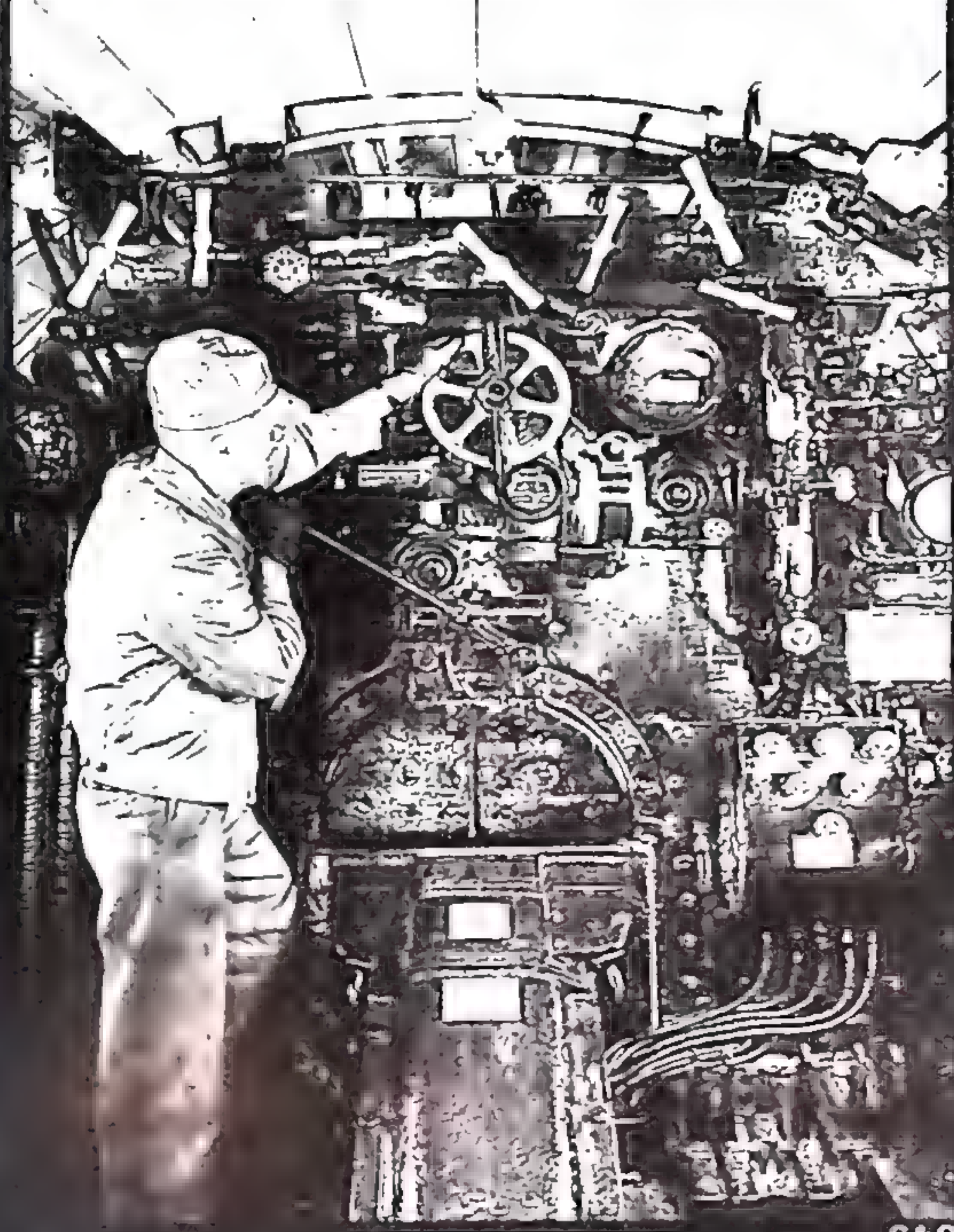
Each builder's locomotive would develop about 3750 h.p. (not the 4500 h.p. originally envisioned), be geared for 100-mph service, have dynamic braking, and be equipped for multiple-unit control. The LDC selected the Alco and

Baldwin proposals, but held off on issuing contracts. As the locomotives' various components neared completion, a chassis would be ordered from each builder.

Though the locomotives would require a standard two-man crew, they would be very simple to operate. When the engineer set the desired speed, the controls would adjust the firing rate to obtain it. The layout and operation of the electrical system would follow diesel-electric practice. The 25 tons of



RICHARD H. KINDIG



C&O

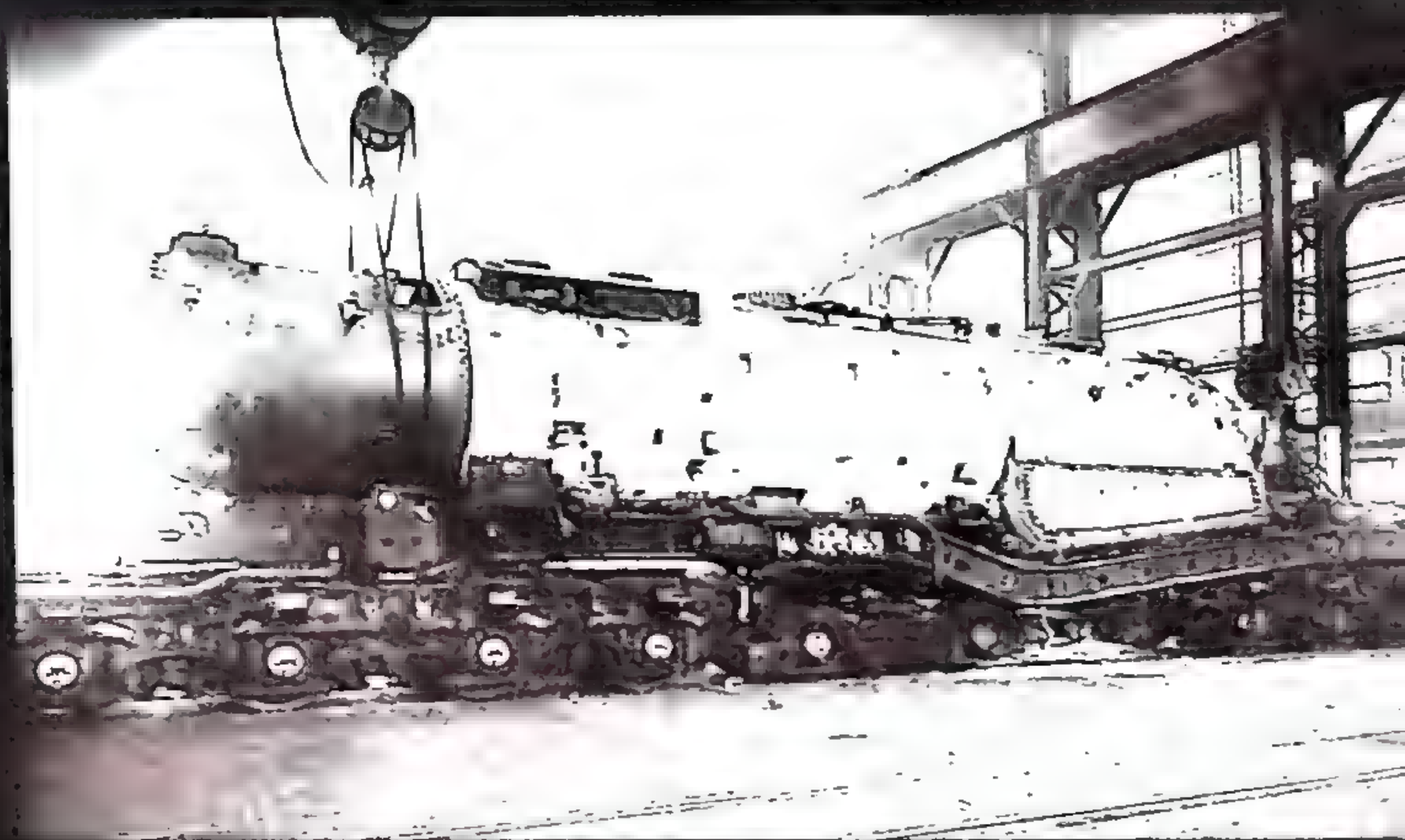
The M-1's backhead (or "fronthead," since the boiler faced the rear) resembled that of a conventional steam locomotive.

dered before he arrived). The steam turbines amounted to an expensive set of trinkets, Browne thought, which were not only impractical but also not suited to the road's needs. Among the specific complaints were that they were simply too big for general use on the system, had too high a center of gravity, and would be too expensive to operate and maintain. Subsequent operating experiences proved Browne to be correct.

Brown's group actively supported the Locomotive Development Committee's effort to develop a coal-fired gas turbine, but they also worked on their own design. Among their work at C&O was an order for a pair of coal-burning gas turbines for a locomotive which would be used to pull a low-profile, lightweight, high-speed passenger train under development. This was probably the *Train X*, which later appeared with diesel locomotives, but not on the C&O.

Road Nos.; class: 500-502; M-1
Owner: Chesapeake & Ohio
Gross horsepower: 6000
Turbine type: Steam
Transmission: D.C. electric

Fuel: Coal
Wheel arrangement:
2-C1-2+C1-B (plus tender)
Builder, dates: Baldwin-Westinghouse, 12/46-6/47



C&O

An engineer's-side view at Baldwin's Eddystone (Pa.) plant shows the boiler being fitted to the frame. Cab and coal bunker will be added to the right of the firebox, turbine and generators to the left of the smokebox.

standard locomotive coal in the bunker would be sufficient for 1000 miles of operation. A stoker would carry it to a crusher, which would reduce it to a 16-mesh size for storage in a pressurized tank. Coal leaving the tank would be fed into Yellott's atomizer, where it would be exploded into flour-sized particles by instantly dropping the pressure from 150 psi to 65 psi. The airborne coal particles would then be delivered to the combustor.

Preliminary studies indicated a

British "Vortex"-style combustor would be suitable. The combustor's power output was dictated by the firing rate, which had to be stable and controllable. A compressor would deliver air to the combustor at 65 psi. Some of the air would flow around the combustor to act as a coolant, while the remainder would mix with the coal and be burned. A regenerator would raise the temperature of the air entering the combustor to 450 degrees F, where a burner with a pilot light would ignite it. The hot gas

would leave the combustor at about 1350 degrees, but would be cooled to the desired working temperature by mixing it with the cooling air.

The hot gas would then enter a battery of "Aerotec" tubes, which would remove all ash to prevent damage to the turbine blades (ash in the gas would have an erosive effect on the blades). Similar tubes had been used in the desert by the Army to filter air, and it was hoped they could be adapted to the LDC's needs. After leaving the

tubes, the hot gas passed through the turbine, which was connected to the main shaft powering the compressor and generators. Waste gas was routed through the regenerator prior to being exhausted into the atmosphere.

Glowing reports of this project filled the trade journals, with the debut of the prototypes confidently predicted for 1948. The LDC was trying to fast-track the effort despite the substantial amount of research and development work required and the awesome technical challenges facing it. There were some who didn't share this optimism.

For example, on March 23, 1948, PRR Vice President C. D. Young called "absurd" John Yellott's comment in the January 31 issue of *Railway Age* that a locomotive could be on test later that year. Young further observed that "... Mr. Yellott should confine himself to research work and not so much to engineering propaganda." In Young's opinion, it would take closer to five years to fully develop a workable coal-burning gas-turbine locomotive. In fact, the Pennsy's motive-power plan at the time was to buy diesels for another five years, by which time "another form of motive power" would be available. The railroad realized the obstacles the LDC faced, but was hopeful of the outcome. Events would prove the Pennsylvania's concern to be correct.

The long road of research

The Locomotive Development Committee's research program proved much longer and more complicated than originally envisioned. The LDC's work can be divided into two phases:

Phase I (May 1945-May 1949)

The LDC allotted its testing work to various labs having specific areas of responsibility. The Battelle Memorial Institute handled combustor work; Johns Hopkins, the coal-processing and separation system; and the Institute of Gas Technology, the erosiveness of fly ash on turbine blades.

In early 1946, full-scale, full-pressure testing of the coal-handling and ash-separation systems began at a small Alco facility in Dunkirk, N.Y. (site of its former Brooks Works), where adequate compressed air was available. Alco was taking on a larger role in the project, and provided the facility and staff. By early 1947, most of the small-scale testing was completed, and Dunkirk became the focal point of the program. Another lab at Fontana, Calif., also conducted full-scale, full-pressure tests. The Northrup-Hendy Company

GE 101, WESTINGHOUSE 4000, AND UNION PACIFIC'S FLEET: GAS-TURBINE-ELECTRIC, OIL-FIRED

AFTER THEIR less-than-satisfactory experiences with coal-fired steam turbines, GE and Westinghouse turned their attention to oil-fired gas designs with electrical transmissions. Both firms fielded prototype locomotives, though only GE's resulted in any production models.

The GE unit was based on a gas turbine under development late in World War II. It was an outgrowth of a study that showed about 75 percent of the freight locomotives in the U.S. were in the 4000-5000 h.p. range and carried about 500,000 lbs. on drivers. Rather than follow diesel practice and use several units to make up one locomotive of that size, it was decided to construct one unit having a horsepower rating in that range. This was possible because of the basic nature of turbines; a turbine of a given horsepower is only a fraction of the size of an equivalent diesel engine. All subsequent turbine locomotives, and indeed even predecessor ones, followed this basic logic.

The new locomotive, a double-cab, freight-service design mounted on B-B+B-B running gear and rated at 4500 h.p., was completed at GE's Erie plant in November 1948. It featured an open-cycle turbine, a boiler to heat the thick Bunker C oil fuel, and a small diesel engine for hostling moves. Numbered 101 and lettered for Alco-GE at first, it was tested on the PRR and Nickel Plate Road before heading west to the Union Pacific, where it was renumbered 50 and repainted for UP. It tested on that road between July 1949 and March 1951, at which time it was returned to GE.

On the UP, with its miles of high-speed main line and its large-unit motive-power philosophy, the turbine found a natural home. GE eventually built 55 freight locomotives for the road, all refinements of the 1948 prototype. The last were retired in 1970.

Westinghouse's oil-burning gas turbine rolled out of the company's East Pittsburgh plant in May 1950. Like GE's unit, it had B-B+B-B running gear and a diesel-style carbody. However, the Westinghouse locomotive was powered by two turbines (each rated at 2000 h.p.), contained a train-heating boiler for passenger service, and had just a single cab. Though entirely a Westinghouse project, the unit bore a resemblance to a Baldwin "Sharknose" diesel and was lettered BALDWIN-WESTINGHOUSE for marketing purposes.

Numbered 4000 and painted light blue, the unit tested on the PRR, Katy, C&NW, and other roads. Though apparently modestly successful, the "Blue Goose" was returned to Westinghouse for dismantling and not duplicated.





GE 101 of 1948, seen under catenary on the test track at Erie, Pa., was the U.S.'s first gas turbine. Westinghouse 4000, being fitted with one of its turbine assemblies at East Pittsburgh, followed two years later. Though both burned oil, they helped advance the cause of turbine motive power in general, keeping hope alive for backers of coal-fired gas units.

GE



WESTINGHOUSE

Road No.: 101
Owner: General Electric
Gross horsepower: 4500
Turbine type: Gas

Transmission: D.C. electric
Fuel: Oil
Wheel arrangement: B-B+B-B
Builder, date: GE, 11/48

Road No.: 4000
Owner: Westinghouse
Gross horsepower: 4000
Turbine type: Steam

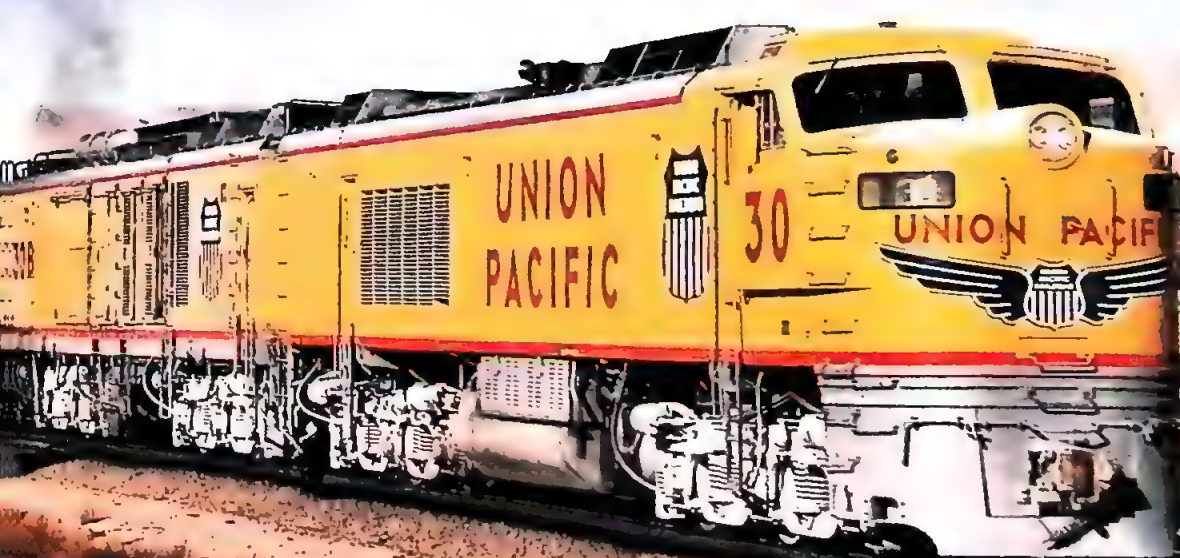
Transmission: D.C. electric
Fuel: Oil
Wheel arrangement: B-B+B-B
Bldr., date: Westinghouse, 4/50

Road Nos.: 51-75; 1,1B-30,30B
Owner: Union Pacific
Gross horsepower: 4500; 8500
(later increased to 10,000)
Turbine type: Gas
Transmission: D.C. electric

Fuel: Oil
Wheel arrangements: B-B+B-B;
C-Cx-C (x = connection between
two interdependent units)
Builder, dates: General Electric,
3/54-10/54; 8/58-6/61

UP's GTEL (gas-turbine-electric locomotive) units, the only turbine fleet in America, was based on GE 101. Full-carbody and "veranda" versions came in 1954, followed by the three-unit (auxiliary diesel, turbine, tender) "Big Blows." East of Green River, Wyo., Big Blow 30 screams upgrade in 1967.

THOMAS J. DONAHUE



NORFOLK & WESTERN 2300: STEAM-TURBINE-ELECTRIC, COAL-FIRED



LEROY A. SCOTT



N&W

TURBINE FEVER reached such a pitch during the late 1940's that it wasn't uncommon for a railroad to consider one or more turbine locomotive concepts. The Norfolk & Western—the most coal-committed and steam-minded of all the major railroads—was one of these. A strong supporter of the Locomotive Development Committee and its turbine project, N&W followed in the footsteps of the PRR and C&O in ordering its own locomotive. The LDC's locomotive was originally to start testing in the late 1940's, but by 1949 it was apparent the unit was years away and the concept was experiencing serious development problems. Perhaps in response to this disappointment, N&W ordered a huge steam-turbine-electric freight unit from Baldwin-Lima-Hamilton/Westinghouse.

The unit was similar to the C&O's *Chessie* trio, though it had some significant differences. The most important was the boiler, which would be a Babcock & Wilcox watertube type that operated at 600 psi. The attractions of this design was that coal could be burned on conventional grates instead of

was able to obtain compressed air from the nearby Kaiser Steel plant so its engineers could develop the combustor. During the tests at Dunkirk and Fontana, it became apparent that many of the initial "solutions" tried at Johns Hopkins weren't workable. The resulting redesign of each major component can be summarized as follows:

Coal-handling. The idea of using a completely pressurized coal-handling system proved unworkable, so alternatives were studied. These included batch systems using two or more pres-

surized tanks, screw conveyors, piston coal pumps, and rotary coal pumps. Only the rotary coal pump offered any promise, so the Fontana lab was assigned the task of developing it. Eventually it was able to perfect a feeder that could supply coal from a storage tank at atmospheric pressure to the pump. The system could then be pressurized from the pump to the combustor. By the end of Phase I, a workable model was being perfected.

Pulverizing coal. Yellott's atomizer failed to meet the LDC's needs because

of its high air-to-coal ratio that caused a large drain on the compressor and an excessive 170 psi drop in the air line. Coal would instead be pulverized in a conventional mechanical mill prior to entering the pressurized system.

Combustor. The Vortex combustor failed to meet expectations, so by mid-1947 the Fontana lab was developing a prototype cold-wall, all-metal, film-cooled combustor based on what had been learned.

Ash-separation system. Fly ash had to be removed from the hot gas before



JAMES A. NEUBAUER

being pulverized or specially prepared, and a much higher working pressure could be used than with a conventional firetube boiler. One interesting feature was a water purification plant situated in the tender. Unlike other steam turbines, the N&W machine rode on diesel-style six-wheel trucks.

N&W's locomotive was completed in May 1954 and numbered 2300, though it was widely known as the *Jawn Henry*. It was immense, weighing 818,000 lbs. fully loaded and measuring 112 feet between coupler pulling faces (161 feet including tender!). The turbine operated at 8000 rpm at full throttle and was capable of providing 4500 h.p. for traction.

On tests, *Jawn Henry* turned in some impressive performances, then settled into an assignment as a pusher out of Roanoke, Va., location of N&W's main shops. Problems dogged the big engine, though, and when the turbine unit failed in December 1957, *Jawn* was out of action for good. By this time, N&W, which had been building its own conventional steam locomotives until 1953, was firmly committed to dieselization.

Steam and coal smoke rise from *Jawn Henry* as he puts his shoulder to a Tidewater-bound train on the Blue Ridge grade east of Roanoke in August 1956. Two years earlier, on July 29, 1954 (above left), when his testing program was in full swing and he was still on the head end of trains, *Jawn* uses dynamic brakes to hold back a downhill train east of Christiansburg, Va.; men visible in the coal bunker are test personnel. Fireman's side of the cab (far left) was as clean as a diesel's, thanks to automatic controls.

Road No.; class: 2300; TE-1
Owner: Norfolk & Western
Gross horsepower: 5000
Turbine type: Steam
Transmission: D.C. electric

Fuel: Coal
Wheel arrangement: C-C+C-C
(plus tender)
Builder, date: B-L-H/Westinghouse, 5/54

it entered the turbine. The Aerotec tubes failed at this, so efforts were made to adapt the American Blower Corporation's type ST-361 ash separator. By the end of Phase I, the ash-removal problem remained a critical concern.

Turbine equipment. Neither Allis-Chalmers nor Elliott made much progress in building their turbines. In fact, after delivering a prime mover for an oil-fired gas-turbine project sponsored by the Santa Fe, Elliott dropped out of the project because its equipment was found to be unsuitable for the applica-

tion. A-C's turbine program was behind schedule and struggling.

The end of 1948 came and went with no prototype locomotive on the rails; in fact, the LDC had made very little progress against the major technical problems. Despite this, new members joined the effort. The Virginian, Wheeling & Lake Erie, and Illinois Central railroads joined the LDC, as did the Pochahontas Coal Company and, later, Alco. By year's end the Fontana lab was closed and all work was concentrated at Dunkirk.

Phase II (May 1949-November 1957)

In 1949 the LDC borrowed a Houdry gas turbine from the U.S. Bureau of Mines merely to have something to work with until its own equipment was available. The Houdry turbine was tested from May 1949 to December 1951. During this period, the ash-removal system based on a battery of ST-361 tubes failed to perform satisfactorily, so a new type of ash separator known as a Multiclone was tried. The units yielded good results, but were replaced by a new design, the Dunlab tube. The Dun-

UNION PACIFIC 80: GAS-TURBINE-ELECTRIC, COAL- OR OIL-FIRED



THE LAST locomotive design of the "turbine fever" era was the product of the Union Pacific's unique interest in turbines and its desire to reduce fuel costs. Though UP was never an active participant in the LDC project, in later years it monitored the work closely. The only road to go for turbines in quantity, UP had a fleet of oil-fired gas turbine freight units, though they suffered from the traditional turbine problem of high fuel consumption. The railroad liked the turbines' high power output, but the fuel bills were a concern. UP had abundant coal supplies along its lines, and looked to them as a source of cheaper fuel.

After the LDC project collapsed, UP obtained rights to the design and built

a prototype coal-fired gas turbine. Using an assortment of bits and pieces to keep costs down, Omaha Shops crafted an ungainly three-unit locomotive. The lead unit was a modified Alco PA1 diesel (UP 607) which housed the cab, a 2000 h.p. diesel engine, and fuel-oil tanks for both the diesel and turbine (the turbine was started on oil, then switched over to coal). The second unit was former Great Northern W-1 electric locomotive 5018, which contained a turbine from UP's gas-turbine fleet that was converted, with some difficulty, to burn coal. The coal itself was carried in a former steam tender (from 4-6-4 3990) rebuilt to carry 61 tons of nugget coal. Also on the tender was equipment that crushed the coal into particles small enough to be fed into

lab tubes proved very effective, and seemed to be the solution to the LDC's ash-removal problem.

Tests with the Houdry unit and the coal-handling system, combustor, and ash-removal system continued to yield promising results. And, though the project was three years behind schedule, there was hope it could soon be completed.

Meanwhile, Allis-Chalmers was so anxious to deliver its turbine that it

tried to get the LDC to accept it despite some technical problems. Reportedly, among them was a high-pitched whine that could be heard for miles! The LDC refused delivery, so it wasn't until September 1950 that installation of the turbine began at Dunkirk. Testing finally began in May 1951.

Three series of tests totaling 3280 hours were run using the turbine, combustor, and coal-handling system. Some of the initial tests used oil as a fuel, but by the end of the tests, coal was used almost exclusively. The first tests occurred between October 1951 and August 1952. The Dunlab tubes failed to remove the ash adequately, so efforts were devoted to improving their performance.

Meanwhile, the feeder/coal pump failed to function as anticipated and had to be redesigned. The pulverizer also required a more suitable replacement. Full-scale tests with the turbine were then halted for more than two years. Some LDC members believed the project was a failure.

On June 11, 1952, PRR President Walter Franklin advised LDC Chairman White that his road was dropping out of the program. Pennsy had invested over \$1 million in the project, yet it had reached the conclusions that there was no enthusiasm on the part of the manufacturers developing the components, and that the PRR did not have confidence in the ultimate results. Franklin noted that his road was "greatly disappointed," but felt it best to close down the LDC operation. However, the Pennsy was in the minority in this view, and the program continued.

Turbine testing resumed in January 1955 and ran through July. Two batteries of improved Dunlab tubes using continuous blowdown delivered encouraging results. The redesigned ro-



Turbine blades and the emblems of participating companies decorate the covers of the Locomotive Development Committee's final report.



RICHARD H. KINDIG

the combustor. The coal-handling system was based on LDC technology.

When completed in November 1961, UP No. 80 was the longest (215 feet) and heaviest (617 tons) locomotive in the world. The turbine unit provided 5000 h.p. at full throttle; the diesel engine was for emergency use and hostling. The 80 was initially tested with fuel oil, but in April 1962 the first tests were run using coal. The unit suffered from many of the same problems that plagued the LDC work, particularly ash erosion of the turbine blades. The giant made some runs to North Platte and Cheyenne, but spent most of its short career in the shop. Renumbered 8080 in April 1964, it was soon out of service for good at Council Bluffs.

Giant even by UP standards, turbine 80 is seen on the wye at Cheyenne on May 18, 1963. Its three component units had diesel, electric, and steam origins. When the 80 died, so did the dream of a coal-burning gas turbine.

Road No.: 80
Owner: Union Pacific
Gross horsepower: 5000
Turbine type: Gas
Transmission: D.C. electric

Fuel: Coal or oil
Wheel arrangement:
A1A-A1Ax2-D+D+2 (plus tender)
Builder, date: UP, 11/61

tary coal pump yielded better results, but the pulverizer continued to be a problem. Significantly, this second series of tests was conducted under high load approximating railroad operating conditions. There were problems, but they were slowly being ironed out.

At this point, however, the LDC engineers changed course. Giving up on the use of standard locomotive coal, they decided to abandon the system as designed and instead adopt an aerated coal-storage system and an in-line pressurized pulverizer. Now that the railroads were essentially dieselized, the use of standard locomotive coal was no longer a strong selling point. The early decision to try to make it work in a gas-turbine had been a mistake that in essence wasted five years of effort and millions of dollars.

Small particles of coal would now be stored in a pressurized bunker so that air could keep it in suspension, i.e., fluid. This would facilitate handling and eliminate the need for the coal pump and other equipment. Instead, a pressurized pulverizer would atomize

the coal on its way to the combustor.

The final tests ran from January to August 1957. In 1103 hours of operation, blade damage was minimal and almost all the equipment worked well, thanks primarily to the aerated coal supply and in-line, pressurized pulverizer. The combustor worked particularly well. A practical coal-burning gas turbine seemed close to becoming a reality. It was time for the LDC board to take the next step: build a prototype.

Calling it quits

The LDC's board of directors met on November 13, 1957, to consider the future of the program. Despite the recent encouraging tests, they were almost a decade behind schedule and only marginally closer to fielding a prototype. Support was waning on almost every front. The board suspended the project, citing "poor business conditions." Alco, though, remained committed to the concept and proposed a road-switcher design for an LDC locomotive, though nothing came of it. Time had run out.

Oddly enough, coinciding with the

demise of the LDC's work was the start of another project that would incorporate many of its findings. Union Pacific had been monitoring the LDC's progress; in fact, some of the 1955 tests had been run at UP's request to see if on-line coal could be burned in the combustor. It was found to be suitable, so UP began working with Alco on developing a coal-fired gas turbine based on the LDC's research. The UP was operating a sizeable stable of oil-fired gas turbines, but if it could get a turbine to use coal, even greater economies could be achieved.

UP No. 80 began road tests in 1962, but quickly experienced serious problems with the coal-handling equipment and other hardware. The project was finally abandoned in 1964 after about 13,000 miles of operation. On this note, two decades after its conception, the idea of a coal-fired gas turbine locomotive was laid to rest. ■

More on our website

See movie clips of turbine locomotives in action at our website, www.classictrainsmag.com

Last gasp of the “Hoot Toot & Whistle”

Visiting a notable short line, with success . . . and regrets

By James B. Armstrong • Photos by the author

IN THE LATE 1960's and early 1970's, I attended college in a small town in the northwestern corner of Massachusetts. Just north of the campus, past the athletic fields, were the tracks of the Fitchburg Division of the Boston & Maine, its main line to New York State and gateways to the west. A few miles east of the campus lay the Hoosac Range and, of course, B&M's famous Hoosac Tunnel. Although the east portal of the historic 4.75-mile-long tunnel was only a dozen miles away by rail, it was not easy to reach by car, and I was halfway through my junior year before I finally visited the site.

At one time the area around the east portal had been a busy place, with a depot and a small yard where B&M added electric locomotives to, or removed them from, its steam-powered trains. That was well in the past, of course, and now the east portal was just another remote and lonely spot on a railroad that itself had seen better days. After a fruitless wait for a train—a westbound manifest headed for Mechanicville, N.Y., behind three or four weathered “Bluebird” GP9's, perhaps, or even the local on its leisurely way back to East Deerfield, Mass.—I decided to leave. I did not go back the way I had arrived; rather, I headed north, toward Vermont.

The road I drove paralleled the Deerfield River, and I could see a single track on the opposite bank. This, I realized, was the Hoosac Tunnel & Wilmington, a little railroad that ran, in the words of Bernard Carman in his brief history book *Hoot Toot & Whistle* (Stephen Greene Press, 1963), “from nowhere to

nothing much in particular.” Suddenly, through the gloom of the winter's afternoon, I saw a headlight. How ironic: I'd had no luck with the big railroad, but here, on a short line miles from anywhere, was a train!

The headlight belonged to HT&W 16, a red GE 44-tonner. I caught up with it at Monroe Bridge, Mass., and got a few pictures as it switched a boxcar and a couple of tank cars at the paper plant there. Then, with its work finished for the day, it took off for Readsboro, Vt., the northern terminus and headquarters



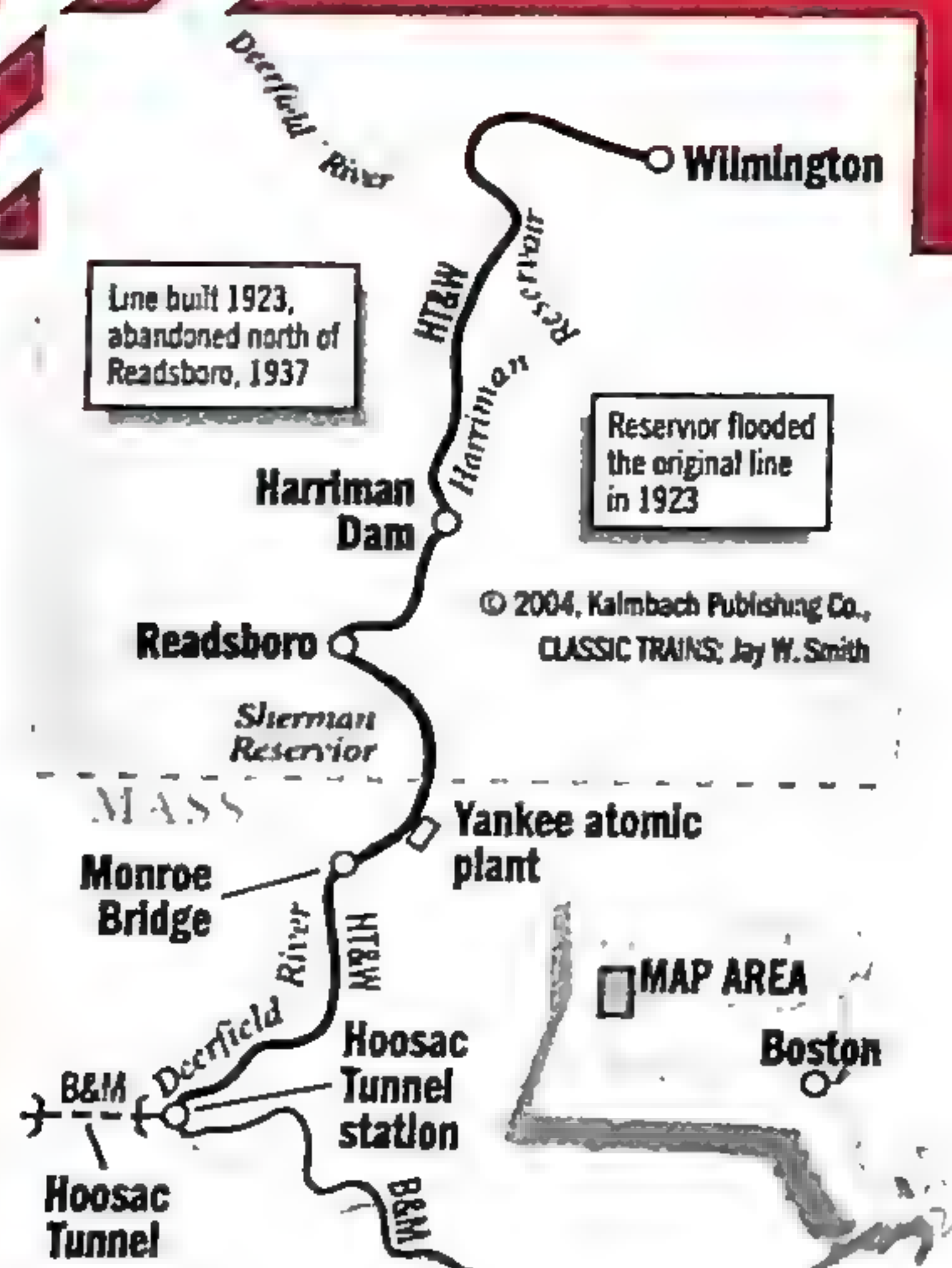
Worthy of a Currier & Ives scene, HT&W 16 readies to switch its last customer, at Monroe Bridge, Mass., in January 1971 (right). At the “commodious” Readsboro (Vt.) enginehouse, 16 is with a “classy” snowplow.

of the 11-mile HT&W. As we both made our way upriver, I could see the train trundling along through the trees on the far bank. In a scene worthy of Currier and Ives, No. 16 was pushing a double-ended, wood-sided snowplow, its cupola and roof covered with fresh snow.





Hoosac Tunnel, Mass., was not only a famous tunnel (just out of view at left, beyond the mainline signal) on the B&M, it was also B&M's station point for interchange with the HT&W.



(not the bore itself, rather B&M's station point of that name) and pick up some cars from the interchange, and they assumed I wanted to hitch a ride. It embarrasses me to say it now, but the thought hadn't occurred to me; my plan was simply to shoot a few trackside photos. I was not about to pass up the opportunity of spending a day riding a freight-only short line, though. I had never ridden on a locomotive before, large or small. I signed.

As the name suggests, the HT&W once ran all the way to Wilmington, Vt. The 13 miles of track between Readsboro and Wilmington were torn up in 1937, not long after the railroad was bought by Samuel Pinsly, who went on to own a number of short lines, in New England and elsewhere.

The HT&W started life as a narrow-gauge railroad. Not until 1913, almost 30 years after its construction, was it converted to standard gauge. Among its otherwise modest claims to fame was the fact that it was the host of what is generally accepted to be the first railfan

excursion. On Sunday, August 26, 1934, the National Association of Railroad Enthusiasts from Boston (a forerunner of today's Mass. Bay Railroad Enthusiasts, Inc.) chartered a special HT&W train from Hoosac Tunnel to Wilmington and back. According to author Carman, the trip was a success, and others followed, including a 1941 outing that attracted more than 600 riders.

Thirty years later, it was painfully obvious that the Hoot Toot & Whistle was barely making ends meet—if indeed it was. Although construction of an atomic power plant near the Massachusetts-Vermont border in the 1950's had provided HT&W with some much-needed revenue, by the early '70's only a single regular customer remained, the paper plant at Monroe Bridge.

On a lovely late-spring day, though, it was easy to put such concerns aside and simply enjoy the ride and appreciate the rugged scenery of the Deerfield River valley and the steeply rising hills of the Hoosac Range. The line's southern 7 miles had been upgraded when

THAT CHANCE ENCOUNTER took place in January 1971. Four months later, after exams were over and the spring semester was behind me, I returned to the HT&W. At the surprisingly commodious enginehouse in Readsboro, I inquired about the day's schedule—and was handed a release form to sign. The two-man crew was getting ready to head down to Hoosac Tunnel



Looking east in the lonely, weed-covered little interchange yard at Hoosac Tunnel, HT&W 44-tonner 16 has coupled to the cars that the B&M's local has set out for the short line to haul northward.



HT&W's engineer eases No. 16 past a tricky spot on the line's less-than-ideal roadbed.

the power plant was built; new ties had been installed, and heavier rail had replaced the old 55- and 68-lb. steel. Even so, our progress was slow, and by the time we reached Hoosac Tunnel, the morning had passed. After switching the cars the B&M had set out for us, the crew broke for lunch. It would have been nice to see a train on the B&M, but once again all was quiet on the Fitchburg Division.

After lunch we headed back north.

Our engine, No. 16 was the same one I'd seen in January. Built in 1942 as Denver & Rio Grande Western 39, it was sold seven years later to Pinsly's Sanford & Eastern in southern Maine before coming to HT&W in 1960. I once heard a railroader remark that there's nothing more tedious (he may have even used the word "boring") than being aboard a train that's crawling along at 10 mph. So, while my trip was indeed special, I could also understand how a daily diet of the same 11 miles of slow track might get monotonous.

The only time we stopped was to switch cars at Monroe Bridge. The HT&W delivered pulp and chemicals to the Deerfield Glassine Co. there, but the plant's product, a type of paper used in food-packing, was shipped out exclusively by truck. After the switching was done, we ran light the rest of the way to Readsboro. Outside the enginehouse, among the weeds, sat the snowplow I'd seen out on the line in January. There was a quiet, almost melancholy air about the place. I thanked the crew for

their hospitality and made a mental note to return in a few months. A trip during the fall foliage season in this out-of-the-way corner of New England would be spectacular.

But I wasn't paying attention, and I missed my chance. With little likelihood of gaining any new customers, and faced with the prospect of having to relocate a large portion of its track because of a construction project, the HT&W called it quits a just few months after my spring visit.

The final train ran that October. Locomotive 16 and sister 44-tonner No. 18 were sent to the Claremont & Concord, a Pinsly line in western New Hampshire. (Eventually, the 16 ended up down south, and today can be found on display in Stevenson, Ala.) I don't know the fate of the classy snowplow.

I wish I'd been around for the last run of the "Hoot Toot & Whistle" or had been able somehow to acknowledge the event, but the little line slipped quietly into history without my realizing it. ■



L.A. in the 1930's

SP's Los Angeles General Shops

Southern Pacific facilities dominate three views of Los Angeles. Much in this 1934 scene is gone, or greatly changed. SP's Los Angeles General Shops, the most complete railroad maintenance facility the city has ever seen, was replaced by an intermodal yard in the 1960's. Officially named Los Angeles Transportation Center, it's still commonly called Shops Yard. Across the Los Angeles River (not yet lined with concrete) is Mission Tower, crossing of SP's main line to Yuma, Ariz., and Santa Fe's line to Pasadena and San Bernardino. This location would assume greater importance and be modified with the 1939 construction of L.A. Union Passenger Terminal. Nothing remains of so-called Taylor Yard but some locomotive-servicing facilities.

- 1 Los Angeles Yard (official SP name; usually called Taylor Yard after Taylor Brothers Feed Mill)
- 2 Southern part of "Taylor" Yard; now occupied by Metrolink commuter-rail shops and yard
- 3 SP Dayton Avenue Tower
- 4 Los Angeles Railway Cypress Ave. streetcar shops
- 5 SP Midway Yard
- 6 ATSF L.A.-Pasadena-San Bernardino main line, now route of MTA light-rail Gold Line (on new bridge)
- 7 N. Broadway viaduct
- 8 N. Spring Street viaduct
- 9 SP Bull Ring Yard [see following pages]
- 10 N. Main Street bridge
- 11 SP "East Bank Line" (also used by UP to reach its Glendale and Pasadena branches)
- 12 SP East Bank Junction
- 13 SP Mission Tower
- 14 SP Taylor Junction
- 15 L.A. General Shops Tender Repair Shop
- 16 L.A. General Shops Boiler/Blacksmith Shop
- 17 L.A. General Shops Car Paint Shop
- 18 L.A. General Shops Car Repair Shop
- 19 L.A. General Shops Locomotive Erecting Shop
- 20 L.A. General Shops Machine Shop
- 21 L.A. Genl. Shops Roundhouse; 100-foot turntable
- 22 L.A. General Shops oil tank car repair shop
- 23 Stockyards (Mission Road Coach Yard after 1939)
- 24 SP "West Line" to Colton

PHOTO: UCLA DEPT. OF GEOGRAPHY, AIR PHOTO ARCHIVES, NEG. E-5433; DATE: FEBRUARY 12, 1934; RESEARCH: DAVID LUSTIG, MIKI MCGINLEY, JOE STRAPAC, MIKE MARTIN



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PHOTO: UCLA DEPT. OF GEOGRAPHY, AIR PHOTO ARCHIVES, NEG. G-815; DATE: FEBRUARY 28, 1934; RESEARCH: DAVID LUSTIG, MIKE MCGINLEY, JOE STRAPAC, MIKE MARTIN

SP's Bull Ring and Cornfield yards

Fitting together like two pieces of a jigsaw puzzle, Bull Ring and Cornfield yards were just north of downtown Los Angeles. This area was also the site of SP's River Station, one of the earliest passenger facilities, literally nothing more than a storefront, as well as one of the earliest SP freight yards. With the building of Los Angeles ("Taylor") Yard, around the bend at the top of the photo, Bull Ring and Cornfield became responsible for sorting and classifying local traffic radiating in all directions, especially to and from the south, down Alameda Street, continuing all the way to San Pedro and the harbor, some 24 miles away. Switch engines were still hauling cuts of freight cars from here and walking them down the middle of Alameda Street four and five decades later. Today there is little left of these yards and if the camera panned to the left, it would see Dodger Stadium, home of baseball's Los Angeles Dodgers.

- 1 Bull Ring Yard
- 2 Cornfield Yard
- 3 N. Broadway (Los Angeles Railway streetcar route)
- 4 Site of first SP roundhouse in Los Angeles (razed early 1900's)
- 5 N. Spring Street (Pacific Electric car route)
- 6 Freight House "A"
- 7 Freight House "B" (inbound freight)
- 8 Freight House "C" (outbound freight)
- 9 Team tracks
- 10 Electric overhead crane
- 11 To Mission Tower and Yuma, Ariz.
- 12 N. Main Street (L.A. Ry. streetcar route)
- 13 Footbridge across yards
- 14 Dexter Transfer interchange with ATSF
- 15 Los Angeles River
- 16 ATSF LA-Pasadena-San Bernardino main line, now route of MTA light-rail Gold Line (on new bridge)



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17

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PHOTO: UCLA DEPT. OF GEOGRAPHY, AIR PHOTO ARCHIVES, NEG. E-9454-15B, DATE: MAY 3, 1939; RESEARCH: DAVID LUSTIG, MIKE MCGINLEY, JOE STRAPAC, MIKE MARTIN

L.A. Union Passenger Terminal

Los Angeles Union Passenger Terminal, now called Union Station, was one of the last major railroad stations built in the U.S. Behind its serene façade, however, was decades of political fighting among L.A.'s three major railroads—SP, Santa Fe, and Union Pacific—and the city fathers, who were tired of trains running down Alameda Street on their way to and from SP's Central Station (shared with UP). The Santa Fe didn't have as much street running, but its station near the L.A. River was outdated and in poor condition. A multi-day celebration preceded Union Station's May 7, 1939, official opening, and that's what we see here in this photo from May 3; note the crowds of pedestrians but absence of trains at the platforms and cars in the parking lots. Carefully restored, Union Station is today as beautiful as it was 65 years ago. There are 13 tracks instead of the original 16, and the three original railroads have been replaced by Amtrak (intercity and long-distance), Metrolink (commuter), and MTA's Gold Line (light rail). A freeway now stands where Aliso Street was, the big gasholders are gone, and public and private renovation has changed the area around the station considerably over the years.

- 1 UP "East Bank Line"
- 2 Southern California Gas Co. plant
- 3 LAUPT tracks and platforms
- 4 Macy Street (L.A. Ry.; renamed Cesar Chavez Ave.)
- 5 Terminal Tower
- 6 LAUPT private-car tracks
- 7 Post Office Terminal Annex under construction
- 8 Vignes Avenue
- 9 To Mission Tower
- 10 To Bull Ring and Cornfield yards
- 11 Naud Junction tower
- 12 N. Main Street (L.A. Ry. streetcar route)
- 13 Alameda Street (SP tracks to Central Station)
- 14 Los Angeles Railway LAUPT station and loop track
- 15 LAUPT offices
- 16 LAUPT baggage, mail, and express building
- 17 Grandstand for LAUPT grand-opening pageant
- 18 LAUPT main concourse and waiting room
- 19 LAUPT Harvey House restaurant
- 20 Pacific Electric baggage, mail, and express tracks
- 21 Aliso Street (Pacific Electric tracks)
- 22 ATSF First Street Yard
- 23 ATSF freight house
- 24 First Street viaduct
- 25 Los Angeles River

Three good in days the Army

By troop train from
Louisiana to California, in 1966

By Edward M. DeRouin

IN AUGUST 1966, my unit of the United States Army, Company D, 40th Signal Battalion, was preparing to ship out of Fort Polk, La., to Vietnam. Weeks before, we had loaded our vehicular equipment on flatcars for movement to Mobile, Ala.,

and transloading onto a ship. Once in Vietnam, we would be reunited with our vehicles. Our final leaves were completed, and we packed our bags.

Several of us overlooked the purpose of the trip to the extent possible and focused on anticipating the jour-

ney from Louisiana to California, which would be on a troop train. I envisioned possible routes and equipment available. Kansas City Southern served the post, but to which connection would our train be delivered? Santa Fe at De-Ridder, La.? Southern Pacific at Beaumont, Texas? Missouri Pacific? I did not know our train's final destination, so I thought about several possible ports on the Pacific Coast.

To ensure a record of the trip, during my leave I had purchased several rolls of Kodachrome slide film. As we packed, I carefully placed my camera and film at the top off my duffel bag. The Army wanted us ready to travel. I was.

On August 23, KCS delivered a 13-car consist to Fort Polk. As I rode past the train in the back of a "deuce and a



G.I.'s wave from the rear vestibule (inset photo above) on a Santa Fe "MAIN" train, Extra 342 West, at Lubbock, Texas on May 8, 1964, two years before the author would ride the same rails on a similar consist of mixed lightweight sleepers. In portraits from the late 1960's are the actual Kansas City Southern E8 (left) and Santa Fe F7 (right) that led his 1966 train.

INSET PHOTO AND BELOW, JOE McMILLAN



half" (2.5-ton-capacity truck), I noted that while Kansas City Southern had provided a baggage car, the balance of the train was surplus lightweight sleepers from several roads including Santa Fe, Rock Island, Southern Pacific, and Union Pacific. I made a mental note to record the car names and numbers once on board. I also noted the absence of a dining car. "Great," I thought, "C-rations already!"

Although this was modern equipment compared with that used to move personnel in earlier conflicts, I quickly learned that travel aboard a troop train was unlike the experiences the public enjoyed. For example, I naively thought my duffel bag and I would be together for the trip. Wrong! With the company assembled, our bags were placed on a couple of trucks and loaded into the baggage car. I had no way to retrieve my camera! There went the photo opportunities. Once on board, I learned that roaming the train was not possible. There went the consist data.

All was not lost, however. As we boarded, I was pleased to see that my squad was assigned to the rear car. Once on board, we were allowed to select our rooms. Some guys were anxious to buddy up, so my two buddies and I talked. Finally I said to go ahead, I would take the remaining room. I wound up with a dou-

ble bedroom to myself, surely a rare treat for a Specialist Fourth Class. Well, I thought, I might not be able to take photos or walk the train, but I had my own room in the last car, and its vestibule was to the rear. This is as close to a ride in an observation car as I might ever get!

The details are lost to history of how the platoon leadership was convinced it was OK for some of us to ride the vestibule as we departed Fort Polk that night, but we did so. KCS Passenger Extra 25 South was under way in the first hour of August 24th. I was the last to retire after we crossed the Santa Fe at DeRidder and, from the KCS crew, I learned the next piece of the puzzle. Our cars were to be picked up by Missouri Pacific train 53, a nameless coach-only train,

the former *Houstonian*, at DeQuincy, La. We would ride on the "Route of the Eagles" from DeQuincy to Houston.

I awoke and prepared myself for the new day. Once in the vestibule again, I peered forward and could see the train. Our cars were tacked on the hind end of 53's regular consist, but my chance to collect the train orders on this stretch of the trip, as I had done on KCS, were nil, for the MoPac flagman was up ahead on the regular train. An E unit and two Geeps lugged the many head-end cars and two coaches of 53, plus our baker's-dozen cars.

As we rolled toward Houston at a pace unbecoming an *Eagle*, I began to think about breakfast. We were an hour behind 53's schedule, and all the talk in the vestibule was about food, or the lack of it. At Houston, our cars were backed onto a track at Union Depot, where the Astros' baseball park sits



KANSAS CITY SOUTHERN LINES

THE KANSAS CITY SOUTHERN RAILWAY COMPANY
ARKANSAS WESTERN RAILWAY COMPANY
F. S. V. B. RAILWAY COMPANY

ALL SUBDIVISIONS

TIME TABLE
NO. 3

EFFECTIVE AT 12:01 A.M.
SUNDAY, APRIL 24, 1966

FOR EMPLOYEES ONLY

R. J. BLAIR,
Vice-President and General Manager,
Kansas City, Mo.

R. D. FRETWELL,
Asst. General Manager,
Kansas City, Mo.

D. F. NICOLA,
Supl. of Transportation,
Shreveport, La.

O. C. BURGE,
Gen. Supl.,
Milw.-K.C.S.,
Kansas City, Mo.

G. M. ...
Supl.

J. L. DEVENY,
Supl. of Terminals
Beaumont-Port

D. K. OWEN,
Asst. to Gen. Supl.,
Milw.-K.C.S.,
Kansas City, Mo.

B. ...

The Atchison, Topeka and Santa Fe
Railway Co.

WESTERN LINES

NEW MEXICO DIVISION

TIME TABLE
No. 5

IN EFFECT
Sunday, April 24, 1966

At 12:01 A. M.
Mountain Standard Time

This Time Table is for the exclusive use and guidance
of Employees.

F. N. STUPPI,
General Manager,
Amarillo, Texas.

J. H. BLAKE,
Asst. General Manager,
Amarillo, Texas.

W. E. BRACK,
Superintendent,
Clovis, New Mexico.

KANSAS CITY SOUTHERN LINES

TRAIN ORDER NO. 254 Aug 23 1966

TO C&E Ex 25 And Southward Extra

AT Levell

Ex 25 run 3000 Extra Levell to
to the dining car sign read all
Train extra first class
And wait at
Levell
12:45 am 12:55 am
Heane 1:10 am
Cl. Miller 1:30 am
Dinger 1:45 am

DO NOT OVERLOOK REGULAR TRAINS ON SECTIONS THEREOF

Conductors, engineers, firemen and trainmen must read train orders and clearances, and check correctness thereof.

MADE Jan TIME 10:23 flack OPERATOR

SAFETY FIRST

Santa Fe
CLEARANCE CARD FORM 902

Aug 24 1966

TO C&E EXTRA 29 WEST

AT Tempe

TO C&E Second 16

AT Levell

TO C&E Second 27 No. 819

AT Levell

TO C&E Second 39

AT Houston

Although the author could not take pictures, he did collect pertinent timetables (previous page) and train orders (below) from friendly crews.

today, and I was heartened to learn that a Santa Fe dining car would be cut into our train there.

OUR PLATOON was to be the first to enjoy breakfast, and we were marshaled to the platform. "Oh good!" I thought, "I could use a walk down the platform to stretch my legs!" As I watched the forward sleepers being coupled to the diner, I heard, "Fall in!" Well, so much for ambling down the platform—we were to march to breakfast! After two "Right Turn, Marches!" and a "Halt!" we arrived at the diner. With my marching over, I could now think about the menu.

Wrong again! Uncle Sam knew what I wanted for breakfast, and the dining-car crew prepared and served it. The quality of the bacon and eggs seemed up to Santa Fe standards, but the portion seemed to be merely G.I.-sized.

The same dining car remained with our train for the rest of the trip. The meals were tasty, especially when compared with mess-hall cooking, but I missed the variety of selections and normal portions one would usually enjoy in a dining car. The meals were quick. We could not linger over coffee—once we finished eating, we walked

through the six or so cars to our sleeper. At least we did not have to give a written order to the waiter. As we ate that first breakfast, the forward portion of our train, including the diner, was reunited with the remaining sleepers.

We left Houston about 9 a.m. behind "Warbonnet" F units as ATSF Extra 29 West and spent the balance of the day crossing Texas. Departing Bellville Yard, the train operated as Second 16, the second section of the *Texas Chief*; diverging from 16's route at Temple, our train again became Extra 29 West. As I caught my first glimpse from the vestibule of blue, freight-service Santa Fe F7's, I groused to myself about my well-protected camera.

We ran fast, as towns with names from cowboy movies like Killeen and Lampasas flashed past. At Sweetwater, Santa Fe added a caboose to the rear—no passenger extra board existed there, so a freight crew caught the call. The crew was friendly, and I negotiated cupola rides for the guys in our car. I taught the G.I.'s on the rear platform how to measure our speed by using a watch with a second hand and the mileposts. There were plenty of mileposts. Several G.I.'s were impressed with our sustained 90-mph running.

As the hands on my watch ap-

proached 11 p.m., we arrived at Clovis, N.Mex., where the caboose stayed behind. It had been a long day, and I wanted to see as much as I could the next day, so I turned in. As things turned out, I would need that rest for unanticipated duties that awaited me.

I DO NOT RECALL when I awoke, but I did not miss breakfast, or the famous crossing of Canyon Diablo bridge in eastern Arizona. Now running as Second 7 (ATSF 7 was a mail train), we sped west, with Winslow, Flagstaff, and Kingman flying past our rear-facing window to "Santa Fe Land." Eastbound trains rushed by in a blur. We descended to the Colorado River, crossed it, and came to a halt at Needles, Calif.

When I was given our train orders at Slayton, Texas, I'd learned that our destination was Oakland, not Los Angeles or Long Beach, as I'd expected, so I shifted my thoughts from Cajon Pass to Tehachapi, Southern Pacific, and Santa Fe's Valley Division. From Needles, Second 7 set out across the desert, and the heat soon drove us inside from the rear platform. I took a short nap because I did not want to miss "The Loop." I



JOE McMILLAN

Snaking through the Santa Fe yard at Lubbock, Texas, on May 8, 1964, the mixed consist of sleeping cars on Extra 342 West, although at 26 cars twice as long, looks not unlike the author's train would here on August 25, 1966.

awoke as we slowed for Mojave and bounded for the vestibule. I may not have had my camera, but I was prepared to burn the images of this famous area into my head.

We left Mojave, and I caught my first glimpse of the grassy hills that rose from the desert floor. We began to climb. A downhill SP freight was waiting in a siding. We wound through Tehachapi's often-photographed curves, tunnels, and loop. As we passed over the crest of the grade, the feel of the train changed as brakes took hold and then gripped more tightly as we eased into a siding. I scanned my gift from the flagman, an employees' timetable, and concluded we were in the hole for the east-bound *San Francisco Chief*. Indeed we were, but two lengthy, helper-assisted SP freights preceded the Santa Fe streamliner. The sun was bright, and we had a clear "Kodachrome sky." The *San Francisco Chief*, powered by a team of "Warbonnet" Alco PA and PB units, roared past. I again cursed my decision to put the camera in my duffel bag.

At Bakersfield we made a mid-afternoon stop to change crews. The new brakeman appeared, and those of us in the vestibule soon learned he had an attitude—a decidedly bad one. He was working only for the summer before re-

turning to college, did not want to work this job, and did not like G.I.'s. I questioned the individual's intelligence as I thought, "OK, you have just insulted eight or so G.I.'s en route to Vietnam. It will be dark soon, and you are alone on the rear platform."

Oh yes, there was one more thing—he had been drinking, heavily. His next mistake was to irritate our platoon leader, who by this time was aware that I knew a little about railroading. I was more than happy to answer when he asked me if drinking on the job by a railroader was permissible, and when I told him, to whom he should write about our flagman.

Up the Santa Fe's Valley Division we rolled. At some point, we entered a siding to meet a freight, and I joined the flagman on the ground. I was concerned for his safety. Well aware of the poker game going on in a room in our car, I convinced him that unless something critical happened, I could handle the flagman's job. Should the need arise, I would fetch him, but meantime he should try his hand at the game of chance. I neglected to mention the poker players' offer to split their winnings with me for my labor. The flagman briefed me. As the freight we'd met disappeared in the distance, we climbed aboard, and I had his lantern in my hand.

At Calwa I picked up train orders on the fly, and at Fresno I highballed the tower operator, who gave me a second look. I don't think he expected the flag-

man to be dressed in fatigues. On we rolled, uneventfully, toward Oakland. As I watched our train approach Stockton under a moonlit sky, my platoon sergeant popped into the vestibule. He wondered, as only a platoon sergeant could, what I was doing out there and where was the guy from the railroad. He seemed relieved when I told him the flagman was still on board. I assured him I would get him, and he told me to get some sleep since we would be in Oakland in 90 minutes.

As the flagman became re-acquainted with his duties, I asked if I could have the train orders from this leg of the journey as souvenirs. All the other brakemen on the trip had granted me this favor, but this guy refused. That was his right, of course, but I would have loved to place the set I picked up at Calwa into my collection and frame them. Perhaps he felt the need to protect himself.

We arrived in Oakland well before sunrise, and the road engines cut off. An Alco switcher coupled to our cars and towed us a short distance to the dock and the awaiting USNS *General Edwin D. Patrick*.

As we climbed off the cars, we fell in to company formation. The next step was to retrieve our duffel bags. My camera and slide film were intact, but my images of the last three days and 2270 miles were only in my mind, never to be shared with friends on a screen in a darkened room. ■

Classic Images

Photo Section



SPELLING IT OUT: Could the signs on Seaboard Air Line's passenger stations be any clearer? City, state, and railroad are obvious as what apparently is train 17, the *Sunland*, glides in for its 5 p.m. stop behind E8 3057 in February 1953. This is SAL's ancestral line, from the Hampton Roads, or "Tidewater" area (SAL's headquarters were in Norfolk, a short ferry ride from Portsmouth, where this train originated) to a mainline connection at Norlina, N.C. The train carried a diner to Norlina, a coach and sleeper for Atlanta (forwarded in the *Silver Comet* beyond Hamlet, N.C.), and a sleeper for Tampa. The mainline *Sunland*, as train 7, was essentially a Washington-Miami operation with a Wildwood-Tampa section plus cars for Sarasota and Venice, Fla.

ROBERT MILNER



Photo Section

COMING AND GOING AT CLINTON: We're at Chicago & North Western's depot (below, second silhouette from right) in Clinton, Iowa, on the Overland Route as Pacific 644 departs with what is probably train 14, the *Chicago Express*, due out at 5:30 p.m. As the 1921 Schenectady 4-6-2 steps out, she obscures an SW1 waiting to head west toward the carshops and yard. The bridge visible carries U.S. 30 over the Mississippi River; C&NW's swing span is around a curve to the right. In the depot we also see the rear end of a westbound, probably No. 27, the *San Francisco Overland*, which had a mix of standard and lightweight cars and was due out of Clinton at 5:55. The date? Likely 1952, as the 4-6-2 was renumbered from 1644 to accommodate a GP7 in a group EMD delivered in early '53.

GUESSWORK: From the number plate "1583" on the automatic block signal's pole (they often designate milepost locations, in tenths of a mile) and known facts from other of photographer Linn Westcott's Great Northern steam color photos in our files, we're guessing that this uncaptioned slide from the mid-1950's shows two trains meeting alongside what now is (and may have been then) Highway 82 east of Evansville, Minn., a small town 159 miles from St. Paul in GN timetables. It is between Alexandria and Fergus Falls on the First Subdivision of GN's Dakota Division, one of GN's two Minneapolis-Fargo (N.Dak.) routes. Other Great Northern photos from this Westcott foray appeared "The Color World of Linn Westcott" in April 1985 TRAINS and in our own STEAM GLORY annual last year.



LINN H. WESTCOTT





TWO PHOTOS, MERT LEET





TWO PHOTOS, JOHN S. INGLES

THIS IS "SCENERY"? Perhaps the most significant interruption to Toledo, Peoria & Western's flat, straight main line through the fields of east-central Illinois between the Illinois River valley at Peoria and the Indiana state line is this slight dip west of Secor, where one can stand beside U.S. Highway 24 and actually compose the horizon *above* the train. The date is May 3, 1980, and this west-bound freight from Logansport, Ind., to East Peoria is in the charge of three types of EMD GP's. Leading is 2005, one of TP&W's 11 GP38-2's of 1977-78; in the middle is 901, still in the out-of-date green-and-yellow livery and one of three 1965 GP35's, all of which ride on trucks of traded-in Alcos; trailing is 700, TP&W's only GP30, built in 1963 on a trade-in of one of TP&W's two F3's. In a bit more than three years, TP&W will be absorbed by parent Santa Fe, only to re-emerge in 1989 as a regional carrier using the old, familiar name.



Photo Section



STEAM ON THE DT&I: OK, so it's not a steam locomotive trundling along on the Detroit, Toledo & Ironton in early 1960 (4 years after the line's last engines were retired). But to judge from the exhaust plumes, DT&I's only American crane, self-propelled X403, is relying on steam propulsion as it clears D&I Junction onto the Dearborn Branch wye for a South Yard puller waiting behind one of DT&I's ubiquitous orange Geeps. D&I Junction is where the lines from Detroit and Dearborn join en route to nearby Flat Rock, Mich., site of DT&I's biggest yard. The puller's destination, South Yard in River Rouge, is on the original DT&I route. The X403, originally a pile driver, was scrapped about 1973.



J. DAVID INGLES





MERT LEET

SCENIC SHORES: Some argue that Amtrak's New York-Montreal *Adirondack* qualifies for inclusion among anyone's Top Ten U.S. train rides for scenery, what with its route along the Hudson River south of Albany and Lake Champlain north of Port Henry, N.Y. That is hard to argue given this June 9, 1969, view of its predecessor, Delaware & Hudson's *Laurentian*, skirting the Red Rocks along Willsboro Bay of the nation's sixth largest lake, across the water from Burlington, Vt. The train, behind one of the famous four ex-Santa Fe Alco PA diesels acquired by D&H in 1968, is about to enter a tunnel.

ALCO HERITAGE: For two decades before the nation's last active Alco PA's attracted fans to the D&H, such units were part of the daily routine on many northeastern roads. Lehigh Valley relied on 14 of the lanky Alcos for most of its passenger service, and two, 601 and 612, were in charge of train 9, LV's daytime New York-Buffalo flagship *Black Diamond*, as it rolled into Tunkhannock, Pa., around 3 p.m. "The Valley" was early to exit the passenger business, doing so in February 1961; the PA's went into freight service for a while, but all were off the roster by 1965.

Southern's *not-so-great* locomotive chases

An exciting day and an unusual routine on "Black's Railroad," the little-remarked LL Subdivision

By Dennis R. Mize

MENTION THE SOUTHERN RAILWAY in Kentucky, and most people think of the famous CNO&TP (Cincinnati, New Orleans & Texas Pacific). This super railroad, with its excellent track and high-density, heavy-volume traffic easily overshadows another main line, the "LS" (Louisville Southern), which runs west from Danville, Ky., through Louisville and on to East St. Louis, Ill. This line too, remains important to today's Norfolk Southern.

Connecting these two lines between Lawrenceburg and Lexington was a 24-mile branch line officially called the LL Subdivision, for its two endpoints, but known locally as the Versailles Branch. During the late 1970's and early 1980's, two very unusual operating situations confronted the LL Sub's local crews.

JANUARY 1977 WAS ONE OF THE COLDEST months in memory in central Kentucky. River traffic on the Kentucky River had been halted owing to 8-inch-thick ice around Lock 5. Nearby, the rural, river community of Tyrone was cut off to highway traffic by ice and snow on the hillsides.

Southern's Versailles Branch, though, remained in service, its daily-except-Sunday local freight making the round trip from Lawrenceburg to Lexington and back. For decades, the line was the bastion of SW1 2007, a 600 h.p. EMD switcher built in April 1947. It was widely believed in the 1970's that the 2007 had held one of the longest continuous assignments for a diesel anywhere in the nation.

By the mid-'70's, traffic had surged on the branch, and Southern was desperate for more power. In 1975, it briefly employed a pair of SW1's between Tyrone, site of a Kentucky Utilities coal-fired power plant, and Lexington. A year later, as coal traffic to Tyrone increased, the second SW1 was replaced by a GP7.

Southern's problem on this branch was two big bridges

on the west end of the line—Cedar Brook Viaduct, at milepost 2.0LL, and the Kentucky River bridge at milepost 3.1LL—which had severe weight restrictions. Four-axle diesels could not exceed 200,000 lbs. (50,000 lbs. per axle), which created the need for the lightweight SW1.

A second SW1 could have been used if an idler (spacer) car with multiple-unit cables was placed between the units (similar to another situation of the era, with Alco RS3's and an old coach, on Southern subsidiary Central of Georgia in southern Alabama). This approach had been discussed for the LL Sub in the 1960's but was never implemented. Instead, trains 21 eastbound and 22 westbound would double or triple (and on one occasion, quadruple) their trips between Versailles and Lexington, where the 2 percent climb up Pisgah Hill was the line's ruling grade. Even with the low-speed, maximum-traction gearing of 65:12, an SW1 was rated at only 900 tons up Pisgah Hill.

In charge of the LL Sub crew was a veteran Southern conductor, a Mr. Black. A trainmaster in Louisville referred to the Versailles Branch as "Black's railroad." Black ran a tight operation, and did so by the book: "Every car had a proper place, and every car had better be in its place." Because of the tonnage restrictions with a small engine, this train became a harbinger of the future because the crew, by special agreement, never used a ca-boose—it was an unnecessary additional car. The full crew rode the engine, placing a flag on the rear car's coupler.

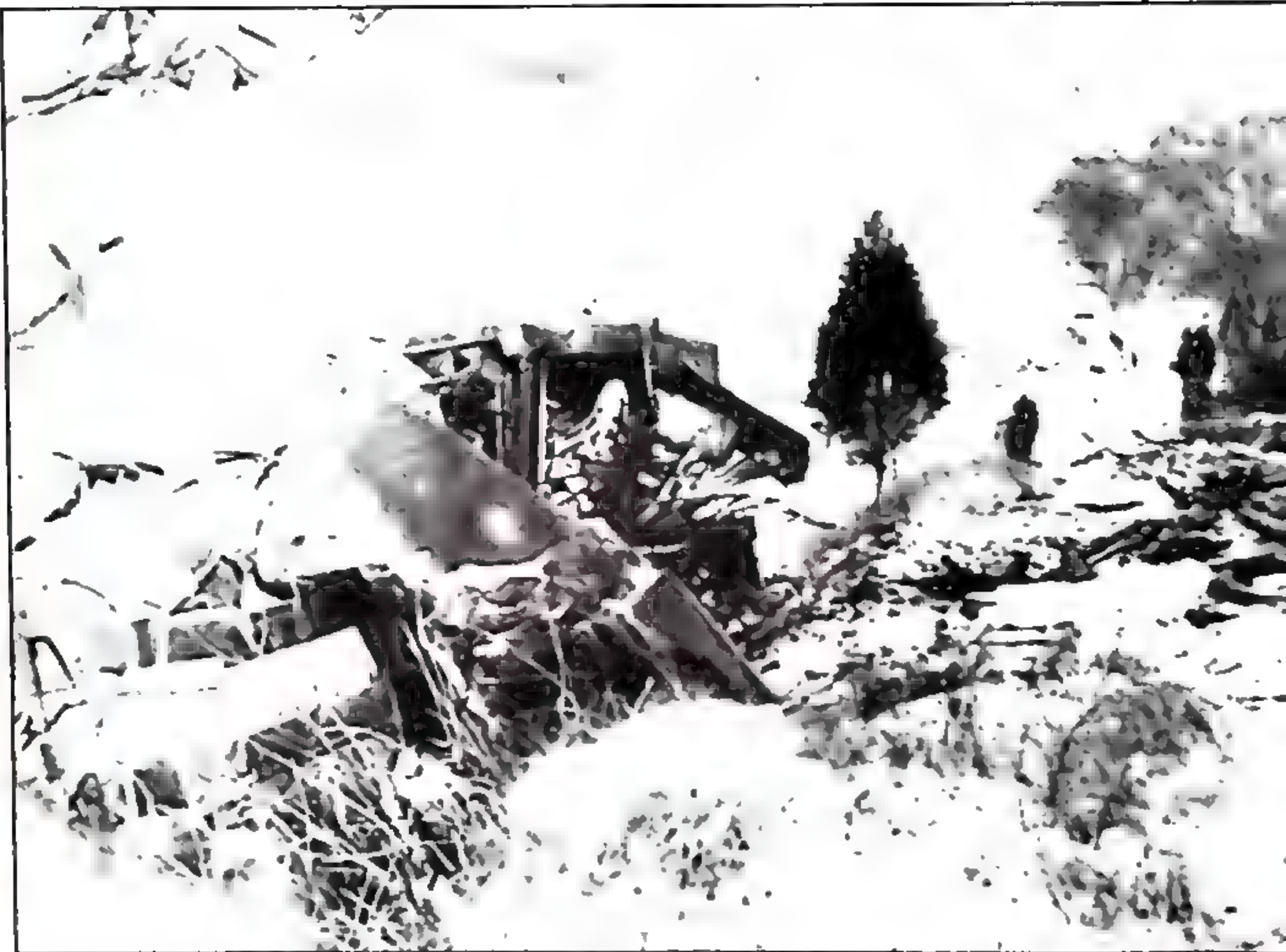
And so it was on January 15, 1977. With a bitterly cold temperature of 17 below zero, snow and ice everywhere, and impassible roads, the crew, with SW1 1014 (which Southern had renumbered from 2011), went on duty at Lawrenceburg and ran to Tyrone. It then picked up the coal hoppers from the Kentucky Utilities power plant, plus GP7 8272, and continued to Versailles. After switch-



After GP7 8272 got away and plunged off the Tyrone power plant spur and destroyed itself (right), "chase engine" SW1 1014 narrowly escaped the same fate, just slightly derailing (top) on its futile rescue attempt.

ing Versailles industries, the train went on to Lexington. The crew set out the train in the yard, then went to lunch while their locomotives were fueled. With the GP7 assisting the SW1, they needed only one trip to get back to Versailles. There, the crew switched three customers—Rand McNally, McCauley Bros. Feed, and Sylvania—and got under way around 5:30 p.m. in fading light. Proceeding to Tyrone, the train arrived as darkness set in.

The crew uncoupled the two units from the train and backed into a yard track to set out the Geep. Whether they forgot to tie down the Geep's hand brake or made a conscious decision to rely on the unit's air brakes to hold is not known, but as they uncoupled the SW1 and pulled



TWO PHOTOS COURTESY "ANDERSON COUNTY (KY.) NEWS"

forward, the GP7 started to roll on its own, heading down the steep grade to the KU power plant.

Now, the Tyrone KU spur descended around a hill to the river bottom and ended up at the base of the Kentucky River bridge, more than 200 feet below the LL Sub's main track. The spur was only about 6000 feet long, so its grade was about 3.5 percent. Two safety (runaway) tracks were in place, one near the top and one farther down. Per Rule 130.1, switches were supposed to be lined for the safety tracks. And in the days of Conductor Black, they had been. But by 1977, Mr. Black had retired, and this crew had left the runaway track switches lined down the hill. Special instructions also required each descending



THREE PHOTOS, DENNIS R. MIZE



On the afternoon of Thursday, April 29, 1971, veteran 2007 ambles into Versailles yard (above) with L&N coal bound for Kentucky Utilities' Tyrone Power Plant. The name of Southern subsidiary Chattanooga Traction was almost too big for the hood of LL Sub backup SW1 No. 4 (left).

relate years later, "The locomotive took a flying leap into the pond."

In a fashion typical of the Southern in this era, the story was "contained," although the local paper, the *Anderson County News*, carried two pictures of the mishap. The crew faced an almost certain formal investigation. GP7 8272 was a pile of junk and was written off the books as a total loss, with a fully depreciated value of \$762. Six gondolas were brought in, and the Geep's remains were hauled off to Danville, Ky. One local railfan heard of the story, tracked down the gons at Danville, and managed to find a builder's plate as identification of the unit involved.

train to use retainers on all cars, set to a 45-degree-angle "high pressure position." A full brake test was to be made, with all brakes inspected for a set and release, before starting down the hill. Maximum speed was to be kept under 8 mph at all times.

Yet on this cold, dark Saturday evening, at about 6:20 p.m., GP7 8272 was unmanned and rolling freely down the grade! The crew on SW1 1014 immediately stopped, reversed direction, and opened the throttle to chase the Geep, hoping to catch it on the hill. For all the racehorses she passed on her daily trip to Lexington, however, a racehorse the little 1014 was not. Around and down the hill rolled 8272, gaining speed as it descended the spur.

Near the foot of the grade, at the turnout for the switchback into the power plant, the speeding Geep jumped the track. It rolled over an embankment, overturned several times, and flattened a stone wall before coming to rest near a pond on the KU property. The little chase engine was not far behind, and when it hit the track damaged by the derailling Geep, it too derailed, but upright on the edge of the ballast. This vain pursuit was probably the fastest trip the little switcher had ever made down the Tyrone spur.

The chagrined crew walked to the KU power plant and notified utility and Southern Railway officials of the incident. Luckily, no one was hurt, and nothing at the power plant was in danger. KU employees immediately called their plant manager, Howard Asher, at home. As he would

Soon the LL Sub's actors changed, but not their character. In 1979, the chase engine, SW1 1014, was sold, and on the second day of 1980, the three-decade LL Sub veteran unit, SW1 1011 (the ex-2007), was also sold, to Koppel Co. of Enola, Nebr. Southern replaced them with SW1 1002, renumbered in 1972 from Chattanooga Traction Co. 4 (CTC was a Southern subsidiary in the northern part of that Tennessee city). CTC 4, also built in 1947, by 1980 was the yard engine in Somerset, Ky., but was no stranger to the LL Sub, as it also served as backup unit for the 2007. Whenever the 2007 was out of service, CTC 4 would be picked up by a mainline freight and hauled to Lawrenceburg for the next day's local. This was not an entirely new duty for CTC 4, for during 1967, when the 2007 spent several months at Chattanooga's DeButts diesel shop being overhauled, CTC 4 was 2007's replacement.

ANOTHER INTERESTING DEVELOPMENT, perhaps unique in American railroading, came to pass in the early 1980's on the LL Sub, at the Kentucky River bridge in Tyrone. Again, an unmanned train was involved. Completed in 1889, the structure came to be known as Young's High Bridge, after Bennett Young, president of the Louisville Southern Railroad, the line's original operator. The spindly structure towered 280 feet above the water and stretched 1659 feet across the gorge. Just to think about crossing it on a train wasn't for the faint of heart.

Indeed, the train crew during the 1980's had become



wary of the bridge, which had begun to shift slightly. Finally, the crew became afraid to ride across it on the SW1. So, a hi-rail truck was parked at the distillery on the west side of the structure, and each morning when they'd arrive from Lawrenceburg, the crew would stop the train on the west side. A crewman would then drive the hi-rail truck across the bridge ahead of the train.

After he crossed, the engineer would put the SW1 into the Run 1 (lowest) throttle position with a light brake application, and he and the other crew members would get off the engine. The unmanned train would roll across the bridge, and the hi-rail "advance man" would board the locomotive and stop the train once it had cleared the bridge. He would then drive the hi-rail back back to fetch the rest of the crew and return them to the train. The reverse procedure was followed in the afternoon.

This practice continued until the last run of a train across the bridge, in August 1985. Further shifting of the structure forced it to be condemned, and it was taken out of service. With an estimated cost of over \$1 million to raze the structure, the railroad (by then Norfolk Southern) chose to leave it standing.

NS continued to provide service on each side of the bridge. In 1987, the Bluegrass Railroad Museum purchased the track from Tyrone to West Versailles. This 5.5 miles of track gave the museum a permanent home and allowed weekend excursion trains to haul passengers over to see the Kentucky River Gorge and Young's High Bridge. On May 11, 1996, short line Lexington & Ohio, a member of the Gulf & Ohio short-line group of Knoxville, Tenn., began operating the Versailles-Lexington segment, using another Southern-family SW1, Atlantic & East Carolina 1007, as one of its locomotives. Seven years later, on March 25, 2003, another short-line firm, R.J. Corman, bought the line from Gulf & Ohio.

The LL Sub on the west side was kept in service by

At 5:35 p.m. on June 25, 1971, train 22, with the 2007 in charge of 8 cars, eases across Young's High Bridge headed for Lawrenceburg.

Norfolk Southern to serve the Wild Turkey distillery in Tyrone, with SW1 1002—perhaps the last SW1 in Class 1 road service in the country—doing the honors. This locomotive had been overhauled and received roller-bearing trucks. For a few years it was parked in Lawrenceburg, then it was moved to the distillery and kept inside one of the buildings there, operated once or twice a week as needed. The line has since been abandoned by NS and is being considered for rails-to-trails conversion.

Kentucky Utilities' Tyrone power plant is still in operation, available to meet peak demands for electricity. The KU spur was removed several years ago and the rails given to the Bluegrass museum for re-use. Trucks now haul the coal to the KU plant.

TODAY, NS SW1 1002 is parked in Versailles for possible sale. Norfolk Southern has linked the unit's disposition with Young's High Bridge, hoping to donate rather than demolish the structure, which was cited by photographer David Plowden in his January 2004 *TRAINS* Magazine article, "Underrated Railroad Bridges," as a "little-known masterpiece" and "undoubtedly the most perfect specimen of the 19th century cantilever bridge, as it was never reconstructed or strengthened."

The Bluegrass Railroad Museum owns the track between Versailles to Tyrone and offers weekend train rides during the summer months over a portion of the track between Versailles and Milner. The museum hopes to eventually restore the remaining 2 miles of track to Tyrone so visitors can ride the train and see Young's High Bridge and the Kentucky River Gorge, and visit the very spot where Southern Railway's not-so-great locomotive chases took place. ■

Great Photographers

Herb Harwood's East and Midwest

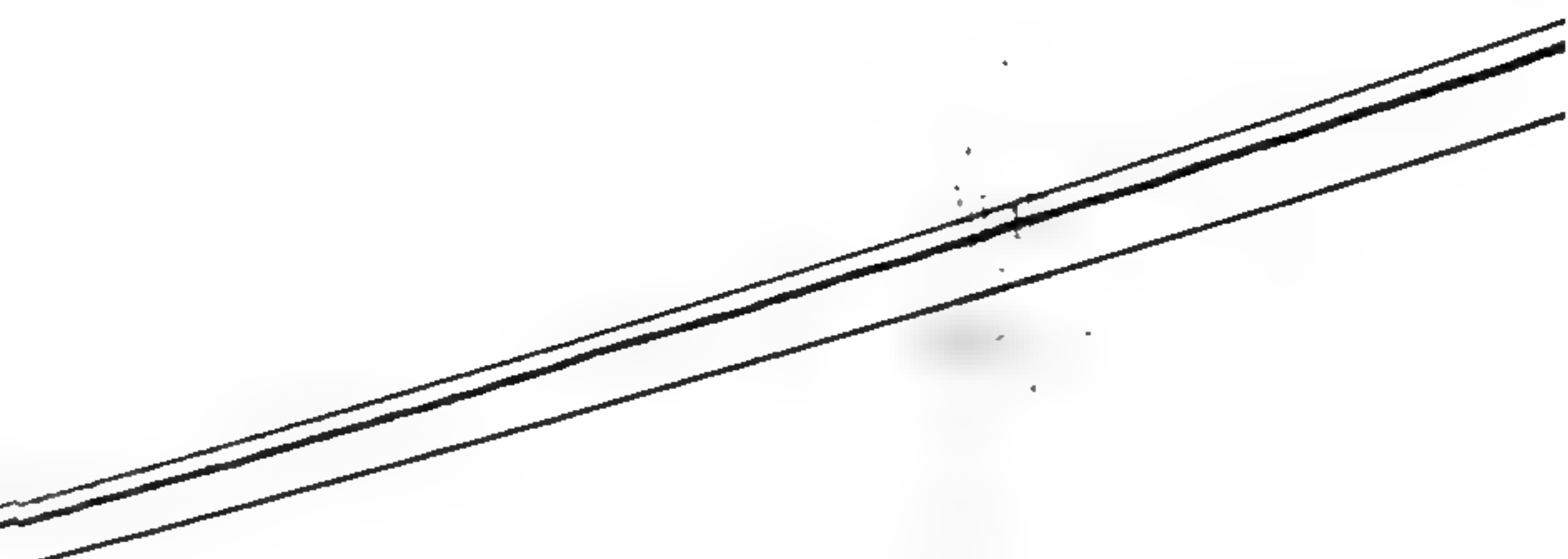
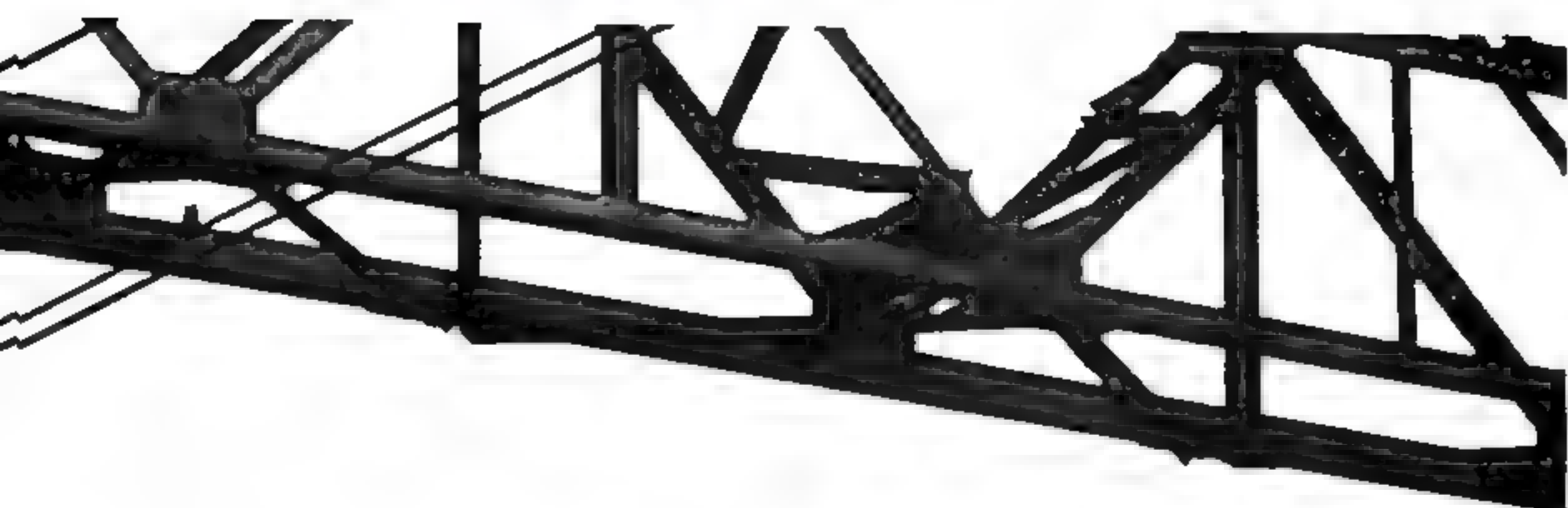




A career railroad official and historian recorded the varied scene of the 1950's and '60's

By John Gruber

Photos by Herbert H. Harwood Jr.



I AM KIND OF HARD to pin down," Herbert H. Harwood Jr. explains when asked about his interests in railroads and photography. While he worked in railroad finance and market research for 30 years, he has never stopped using his medium-format camera, although he takes few pictures these days.

Herb's favorite photos? "The answer to that today will be different from yesterday and tomorrow," he says as he shows a selection of prints on a table in his living room in Baltimore. "My interests change. I'll get enthusiastic about something, cover that as much as I can, then move on, get enthusiastic about something else. That's what I do with the books, too. There is no pattern to them.

"For my whole life I have been very indiscriminating in my interests. I was always interested in trolleys and interurbans, and steam and diesel, but then also got fascinated by structures, old stations, and bridges. That led me into the field of industrial archaeology. What in particular I have been trying to document is *everything*."

Harwood has about 145,000 negatives in his collection, roughly 75 percent of which are his own work, the remainder from others. "I still shoot black-and-white. For various reasons, one of which is just plain habit, I do most of my shooting with a 6x7 Pentax. I have a 35mm camera somebody gave me that I shoot color slides with when I feel like it, but it's really a supplementary thing."

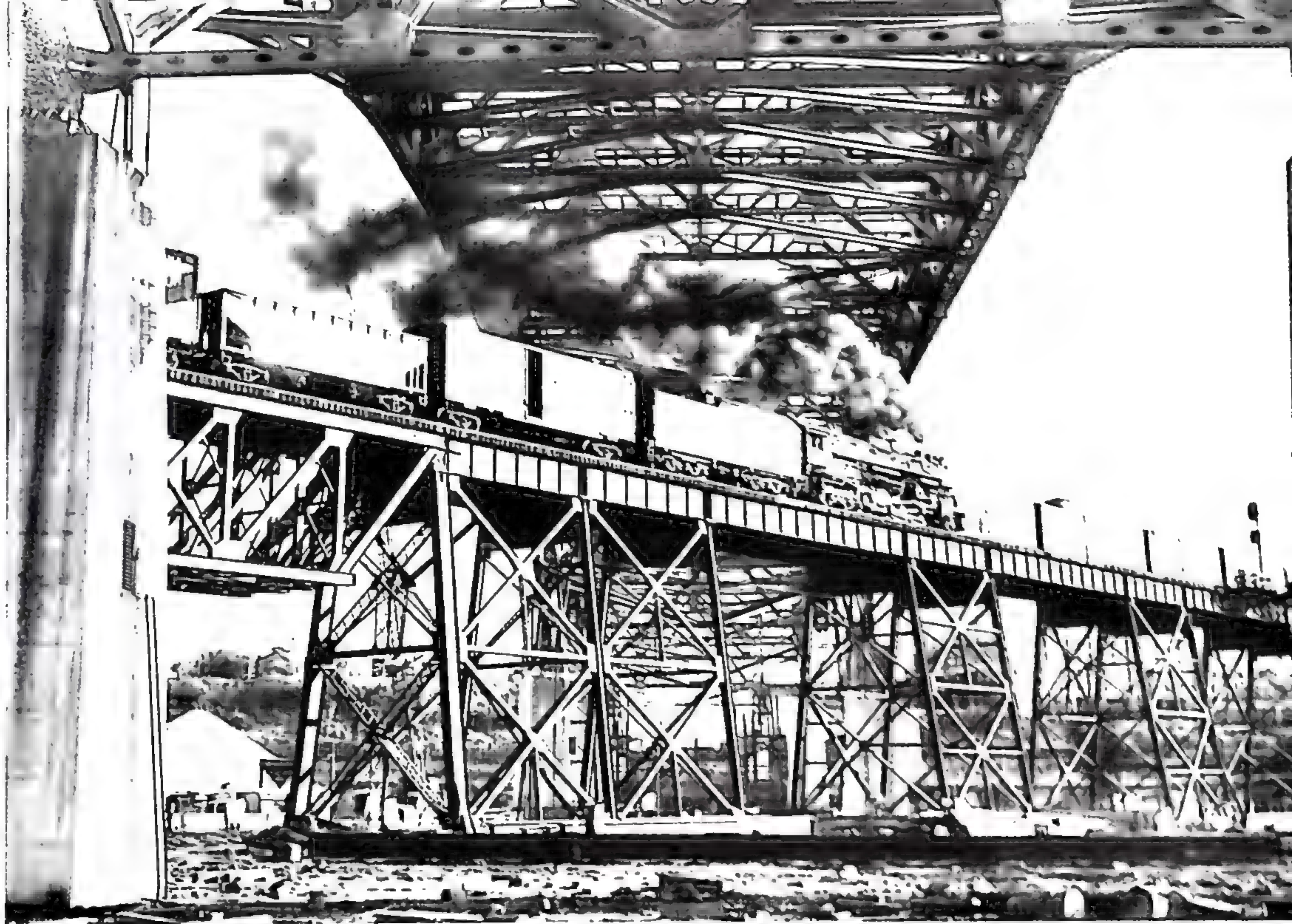
He began acquiring negatives from other photographers in the early 1950's,

NYC 4-8-2 3012 pulls away from Cleveland's skyscraper-topped Union Terminal with train 433 for Cincinnati in January 1955. CUT trackage was de-electrified in 1953, but catenary remains for rapid-transit trains. Until full diesellization, CUT GP9's did the honors here, but a power shortage forced the use of steam in winter 1953-54.

Herb Harwood

Washington & Old Dominion car 46 (right),
loading express at Rosslyn, Va., in July 1946,
was one of Harwood's earliest photo subjects.





The NKP loomed large for Harwood during his Cleveland years. In March 1958 (left), Berkshire 737 roared through Painesville, Ohio, with a westbound; in June '57, 742 passed beneath Cleveland's new Central Viaduct on its way west.

initially in trade. Also, several people have simply given him their collections.

Harwood was born in New York City, but his family moved to Washington, D.C., in 1941 when he was about 10 years old. "My father was sent down there to set up an office for the New York Central, which would basically be a liaison with the White House. I got imbued with railroads early. It ran in the family. My grandfather was a civil engineer for the New York Central, and early in his career was chief engineer for the construction of Grand Central Terminal. He later became a Central vice president. My father ended up with the Central in Boston and retired on the eve of Penn Central—lucky man."

As a teenager, Harwood became fascinated by the railroads around Washington. "In those days, during the war, we had an 'A' ration card, which gave you three gallons of gas a week. We had one car in the family, so I didn't drive anywhere to take pictures. I would ride my bicycle to northern Virginia, to Alex-

andria, to watch the RF&P, the Southern, and the C&O. The Washington & Old Dominion was a particular love of mine. I would take the bus to Ivy City enginehouse. That was my start."

After Harwood received an undergraduate degree in history from Princeton University, his father said, "Well, what good's a history degree going to do? You had better get something resembling a professional education." So he earned an MBA from Columbia in 1955, and immediately afterward went to work in the finance department of the Chesapeake & Ohio in Cleveland. In 1963, when C&O gained control of the Baltimore & Ohio, the railroad moved him to Baltimore, where he has been ever since.

When asked if he and his C&O colleagues changed the tradition-heavy B&O, Harwood smiles and replies, "The B&O changed *us*. I remember one of my bosses I had known at the C&O in Cleveland. He got moved here several years after I did. The C&O knew how to solve all the problems; they were the best-managed railroad in the Western Hemisphere, as far as they were concerned. They were going to show the B&O how to run a railroad. I remember walking into the C&O's guy's office after he had been in Baltimore for a lit-





In a signature Harwood image from September 1956, three mighty B&O EM-1 2-8-4's twist over the Lake Branch south of Middlefield, Ohio, with 127 cars of coal bound for Lake Erie.

tle while. His head was buried in his hands, he was shaking his head, and he said, 'China absorbs all invaders.'"

B&O taught C&O a lesson or two, Harwood recalls. "The B&O had struggled all of its life, and Jervis Langdon, its president, had introduced innovative rate-making and service quality. The C&O had control, but Langdon was quasi-independent. He was very interested in the rate making, so we [market research and rate people] got together to try and figure out how to get new business. That is a story in itself about how rates used to be made on the railroad. The ICC got a bum rap.

Railroads were their worst enemies in ratemaking in those days."

Harwood took early retirement at age 55 in 1986; by then, C&O/B&O had become Chessie System and then CSX. "I was getting tired of merging and merging. I would have had to move to Jacksonville, and go through more reorganizations, and fire more people. I decided there was more to life than that. Since I was in the administrative area, and helped work out buyout programs, I helped them work out an extremely good buyout program and took advantage of it myself."

Did he take pictures all the years he worked for C&O/B&O? "You bet! I have been taking pictures ever since 1945. It went in waves, because I would get preoccupied with college, grad school, girls, and things like that. At Columbia, on weekends I would go out and shoot

the New York Central or one of the New Jersey railroads—but I never had the time to cover what I should have. When we moved to Baltimore, I had more time and got more deeply into photography."

Reflecting on railroading today, Harwood observes, "It is getting awfully boring. In the last three or four years, although the shortline scene gets more interesting, the mainline scene gets duller. I am less inclined to go out and take the same AC's you see all the time."

His railroad colleagues tolerated his picture taking. "I was lucky. I was in with a group of people, who, although they were not railfans to any extent, tolerated people who were different. There was not the real opprobrium that some of these guys in the operating department may have had in the older days. Fortunately, too, on the B&O es-



pecially, not so much on the C&O, there were a lot of closet railfans. The B&O always had that tradition of being nice to railfans. You would go to places on the B&O and they would always be friendly and cooperative with you."

Although Harwood shies away from naming his favorite photos, he is obviously pleased with the results of time spent in the mid-1950's on B&O's Lake Branch that ran from Warren, Ohio, to Painesville and Fairport Harbor. "It was not one of the B&O's major branches, but during the Great Lakes shipping season they handled a lot of coal. It was originally a narrow-gauge railroad, and it still looked like one. It had stiff grades and curves and everything else. The B&O would run loaded coal trains up

Two of B&O's 135 trusty and handsome Q-4 Mikados hurry a freight east at Warwick, Ohio, in August 1957. Baldwin built 'em in 1920-22.

Herb Harwood

there with two and sometimes three EM-1's. It was a hard line to photograph, because traffic was very infrequent. There was no convenient way in those days of finding out when a train was running, so you would go out and take potluck. We often went to Painesville, where the Nickel Plate had a tower whose always-friendly operator knew what was going on; the Nickel Plate seemed to have railfans in all their towers. It was a hard route to document. I am very happy I did, because I was one of the very few who did."

Most of the coal that ran over that line was destined for Canada. During the summer a lot of coal moved to the Great Lakes on all the lines. "Some of it





was pretty weird. The C&O and New York Central and B&O, for example, handled coal to Toledo; they would dump the coal and a boat would carry it to Detroit, where it would get unloaded. It was the rate structure." Harwood's article, "Summer Frenzy on Lake Erie," appeared in Summer 2000 CLASSIC TRAINS.

Harwood enjoyed photographing coal and ore docks. "The C&P dock in Cleveland made nice night pictures with the Hulett cranes going up and down, with the lights on the cranes. At Baltimore, the Pennsy dock, which was archaic when it was built, was an absolutely fascinating thing. It was a classic trestle, with tiny dump cars moving over it on a cable, like a giant tinker toy. It was built about 1915, about the same time as the B&O's more modern Curtis Bay pier."

Harwood was around during the transition from steam to diesel, and got caught up in the same photographic mania that attracted other railfans. Unlike some others, he recorded both the old and the new. "Editors such as [TRAINS magazine's] David P. Morgan would start writing inspiringly about diesels. That got me interested in diesels, so I kept shooting them. And the electrics. I never really made much of a distinction. I shoot electrics, I shoot trolleys, now I am shooting light rail."

Today, Harwood is still busy with research. He is working on a history of the South Pennsylvania project, the unfinished railroad that became the Pennsylvania Turnpike. "When the Turnpike was built, they used very little of the

At Peach Creek, W.Va., in March 1956, the Vanderbilt tender of an unidentified C&O engine is topped off; next at the water plug will be 2-6-6-2 1308, built by Baldwin in 1949 to a 1910 design.

Like many U.S. railfans in the late 1950's, Harwood went to Canada in search of steam. He found CN 4-6-0 1383 on a freight performing for a small audience at Penetaug, Ont., in July '58.

original right of way of the South Penn. A lot of that grading is visible. That led me back to the whole genesis of the project. The B&O ended up with a lot of the South Penn corporate records, because the B&O bought most of the South Penn property in 1904 and held it until the Turnpike came along. So, I could get in to the original correspondence. It was fascinating because it tells a different story from the typical story that you usually read about it."

Herb and his wife, Janice, have two sons, George and Geoff. George is a skilled, self-taught machinist who loves steam and old machinery; he works at the B&O Railroad Museum as a restoration specialist (previously, he restored the Western Maryland Scenic Railroad's 2-8-0). Geoff has lived off and on in Europe for about 10 years and has been in Prague for 6 years teaching English. Herb has not traveled as much as he would have liked, but has been overseas four or five times.

Harwood has an impressive list of publishing credits. He has authored 14 books, the most recent being *Invisible Giants: the Empires of Cleveland's Van Sweringen Brothers* (Indiana University





Harwood did not ignore the early diesel era. On the west side of the Cuyahoga River in Cleveland, a PRR ore puller headed by FM "Erie-built" waits as EMD F units pass with an eastbound hotshot on NYC's Water Level Route in June '60.





Time spent living in Cleveland and New York in the early 1950's enabled Harwood to photograph the Cleveland Union Terminal electrics in both places. Reconfigured for NYC's New York-area lines, motor 222 is on the eastbound *Lake Shore Limited* at Spuyten Duyvil, N.Y., in May 1954.

An early (1946) Harwood photo shows Public Service of New Jersey streetcar 2806 (PSNJ, 1923) climbing the Palisades out of Weehawken.

Press, 2003). The *TRAINS* Magazine index lists him as the author of 11 articles, beginning in 1951. He also wrote one under a pseudonym about C&O's *Chessie* streamliner ["This Was the Train that Was (But Never Was)," July 1968]. Even 20 years after the fact, "The subject was still a little touchy on the C&O," recalls Harwood. He has also been a frequent contributor to *Railroad History* and other publications.

As Herb Harwood looks back at his life of photography and railroading, he has no regrets. He is delighted he made so many photographs. "It was a lot of fun. Even working for a railroad was fun at times." ■

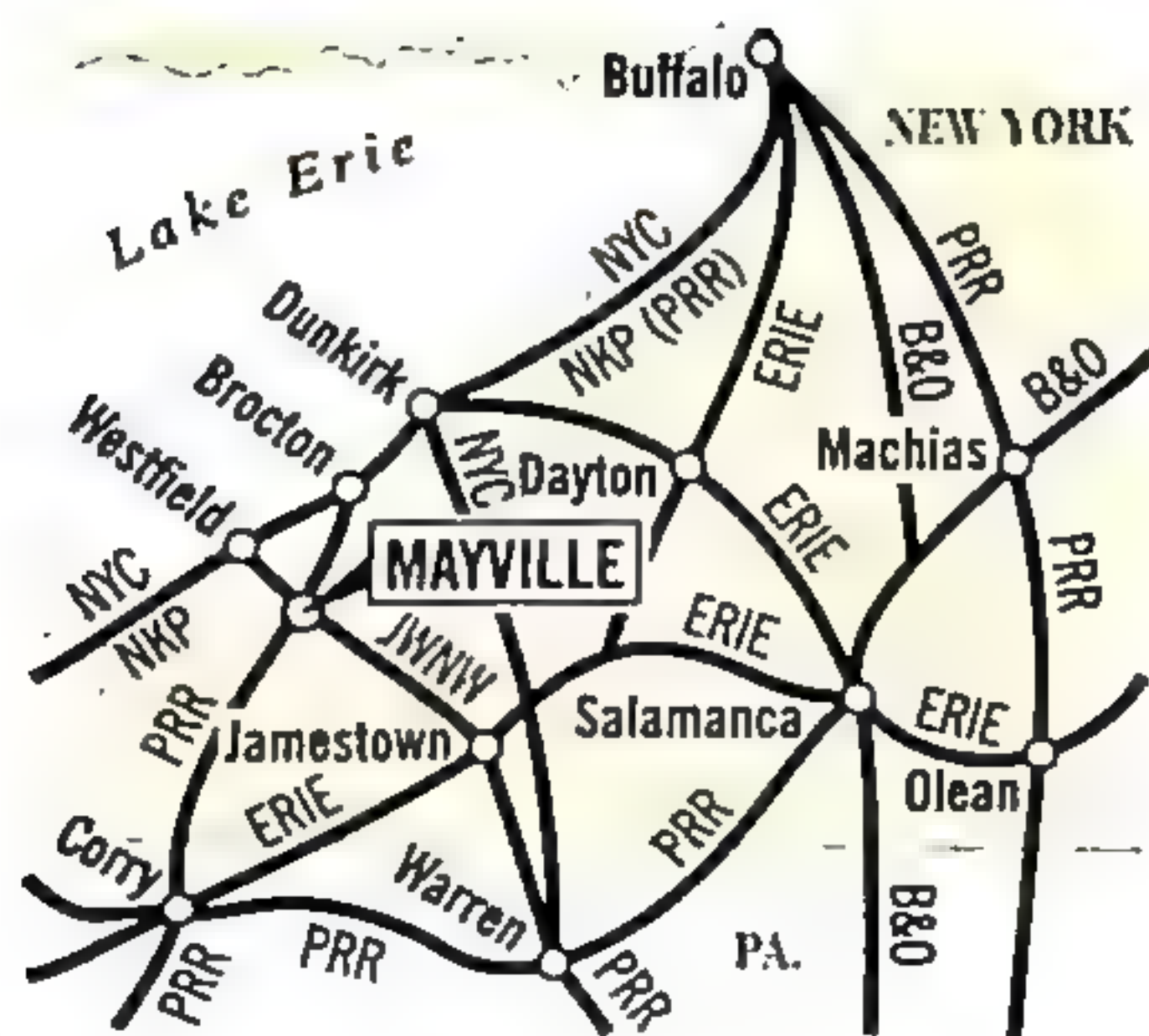




Carfloats were an essential part of New York City freight railroading. On the Harlem River, a Jersey Central tug and carfloat leave CNJ's Bronx freight terminal (curved building behind the gantry crane) in October 1954. Four-wheel diesel 1001 was built by Davenport in 1941.



With the Empire State Building visible across the Hudson River, an NYC Baldwin RS12 leads a West Shore local out of Weehawken terminal. Less than five years after this May 1954 view, NYC would cease its West Shore passenger runs.



One day at . . . Mayville, N.Y.

By J. David Ingles • Photos by Mert Leet

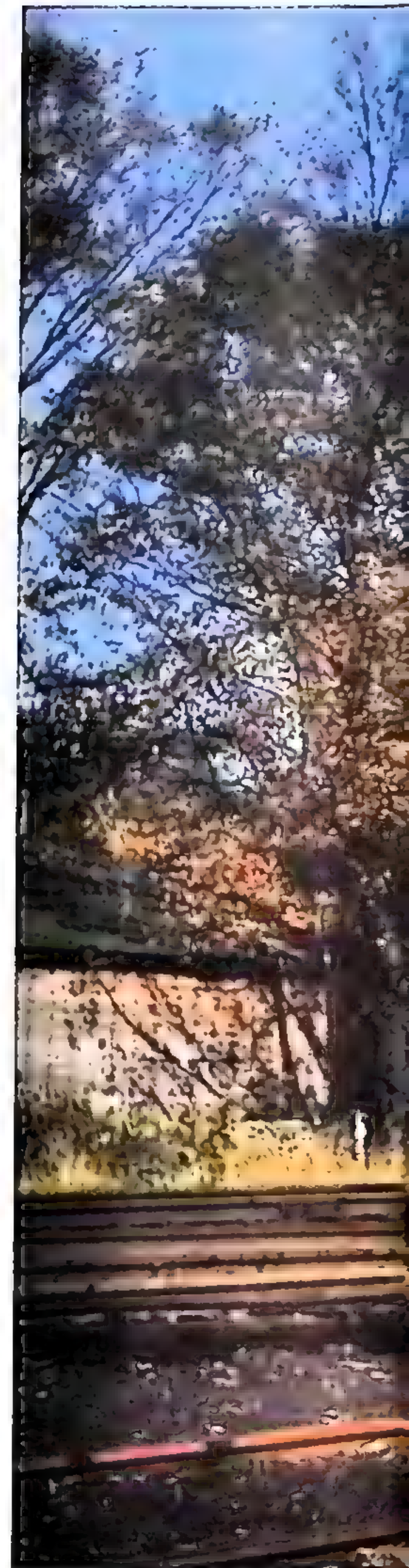
TUCKED AWAY in far western New York is the little town of Mayville, seat of Chatauga County. Anchoring the north end of Lake Chatauga, it has less than 2000 residents today, far fewer than neighbors Jamestown, Dunkirk, Fredonia, or Westfield. It is also the hometown of photographer Mert Leet, now retired from a career in Wisconsin, who grew up on a farm across the lake from Mayville, where he graduated from high school in 1945.

"I was interested in trains from an early age," Leet says. "We lived near the Jamestown, Westfield & Northwestern, the last interurban in the area, which ran from Jamestown to the New York Central at Westfield. My father liked trains, and my uncle carried the mail to the train in Westfield, so I often would go along. I would also ride the interurban with my girlfriend up to Mayville to go to the movies. The JW&NW ran until 1947, but I was away at col-

lege by then and didn't see it get finished off." Leet graduated from Cornell University in Ithaca, N.Y., in 1949.

There are no tracks in Mayville today, but the interurban wasn't its only railroad. Mayville was also on the Pennsylvania's little-remarked Chatauga Branch, which ran 138 miles from Oil City, Pa., to Buffalo, N.Y., the last 50 miles (from Brocton) on Nickel Plate trackage rights. Mayville was 65 miles out of Buffalo, 15 miles south of Brocton, and 28 miles north of Corry, where the Chatauga Branch crossed PRR's Emporium-Erie (Pa.) line.

In October 1951, Leet was nearing the end of his two-year Army stint as a meat inspector at the Quartermaster Depot in Chicago. During a short leave to visit family in Mayville, on a gorgeous day, he took his Argus C3 trackside and recorded the activity you see here on one of the mighty PRR's most obscure lines. **I**





First, PRR 11 2-10-0 4455 (above) eases back into the tiny Mayville yard after pushing a drag freight south to Summerdale. Then L1s 2-8-2 923 shows up with the southbound local and performs some switching work (three photos at left) before heading out for Sherman and Corry.



Relics in the roundhouse

Visits to that most distinctive of railroad buildings revealed a treasury of timeworn locomotives

By George A. Forero Jr. • Photos by the author

ROUNDHOUSES are among the vanishing icons of railroading. Although not as ubiquitous as depots or interlocking towers, they once could be found almost everywhere, from big-city terminals to branchline junctions.

Roundhouses did not usually make a successful transition to the diesel era. While some continued to play a role in the care of the new breed of iron horse (and, in a few cases, still do), most were relegated to secondary roles, if they survived at all. After dieselization, it was not unusual to find roundhouses being used for maintenance-of-way equipment repair or similar duty.

Perhaps the most common use for roundhouses in the post-steam era was for storage. Anything that was on wheels and needed a place out of the way was often shoved into the nearest roundhouse and seemingly forgotten. Business cars, wreck cranes, and unused locomotives could be

found in the stalls of many roundhouses.

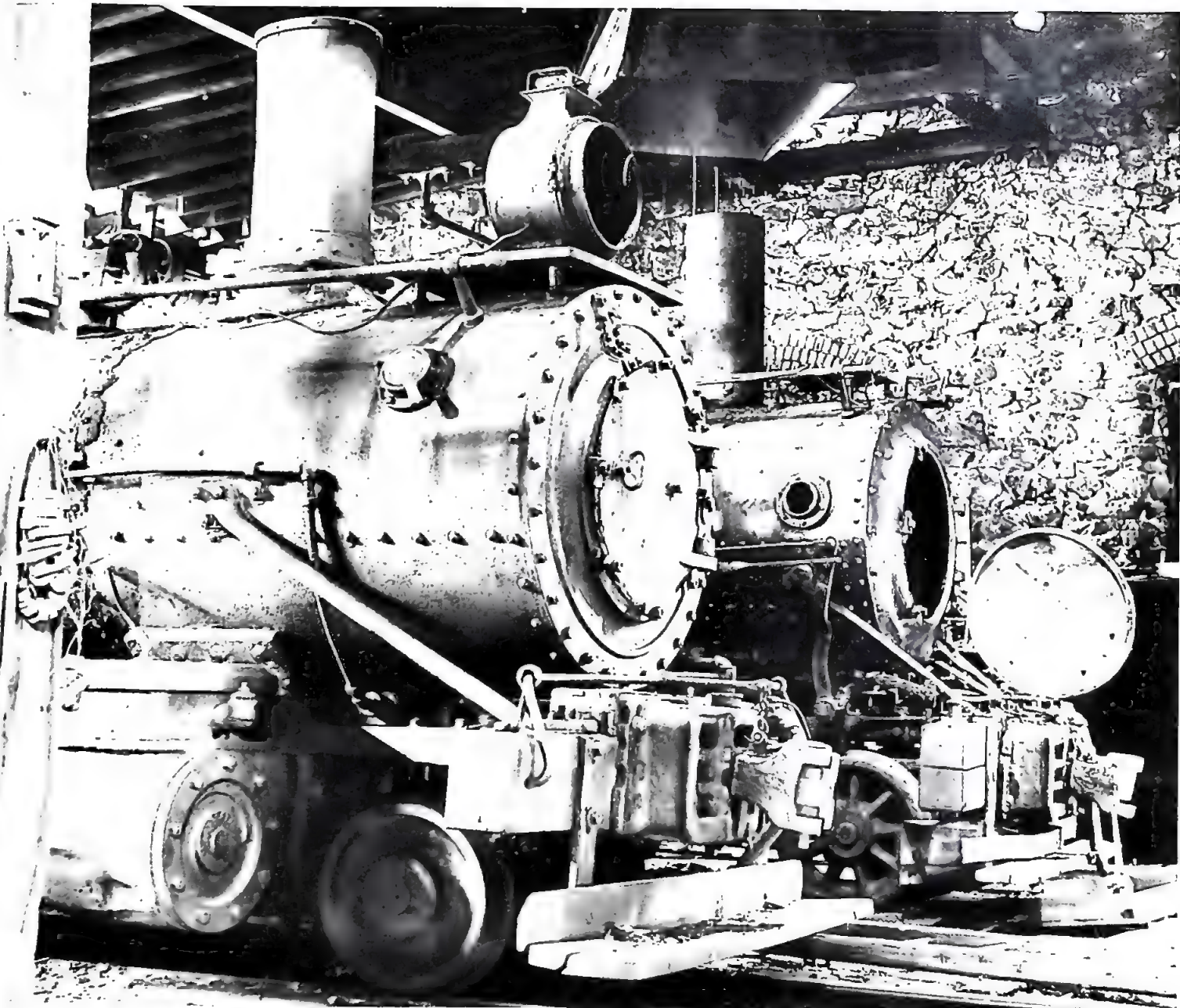
In the 1960's and '70's, most roundhouses were fairly accessible. If they weren't at streetside, where a quick peek into the windows or doorways revealed their secrets, the roundhouse foreman or another available railroad representative usually was agreeable to a request for a look inside. In practice, most railroad employees in those days took little notice of discreet visitors, and most of the roundhouses that were not being actively used were easily visited.

And what treasures one could discover in those hallowed stalls! The accompanying photographs, taken during 1968-1974, depict steam and diesel locomotives that had not operated in years or decades, as well as others just laying over for the night. Surprisingly, many of these locomotives still exist today. It does seem that if an object—even a locomotive—can avoid being discarded long enough, its value increases sufficiently to achieve relic status and warrant preservation.

Escanaba & Lake Superior: Wells, Mich., June 1974

Back when the Escanaba & Lake Superior was an all-Baldwin short line running only between Escanaba and Channing, Mich., its enginehouse was the nightly home for most of its active fleet. The railroad originally had three Baldwin switchers of different models—a V01000, a DS-4-4-660, and an S8. It later purchased the Baldwin

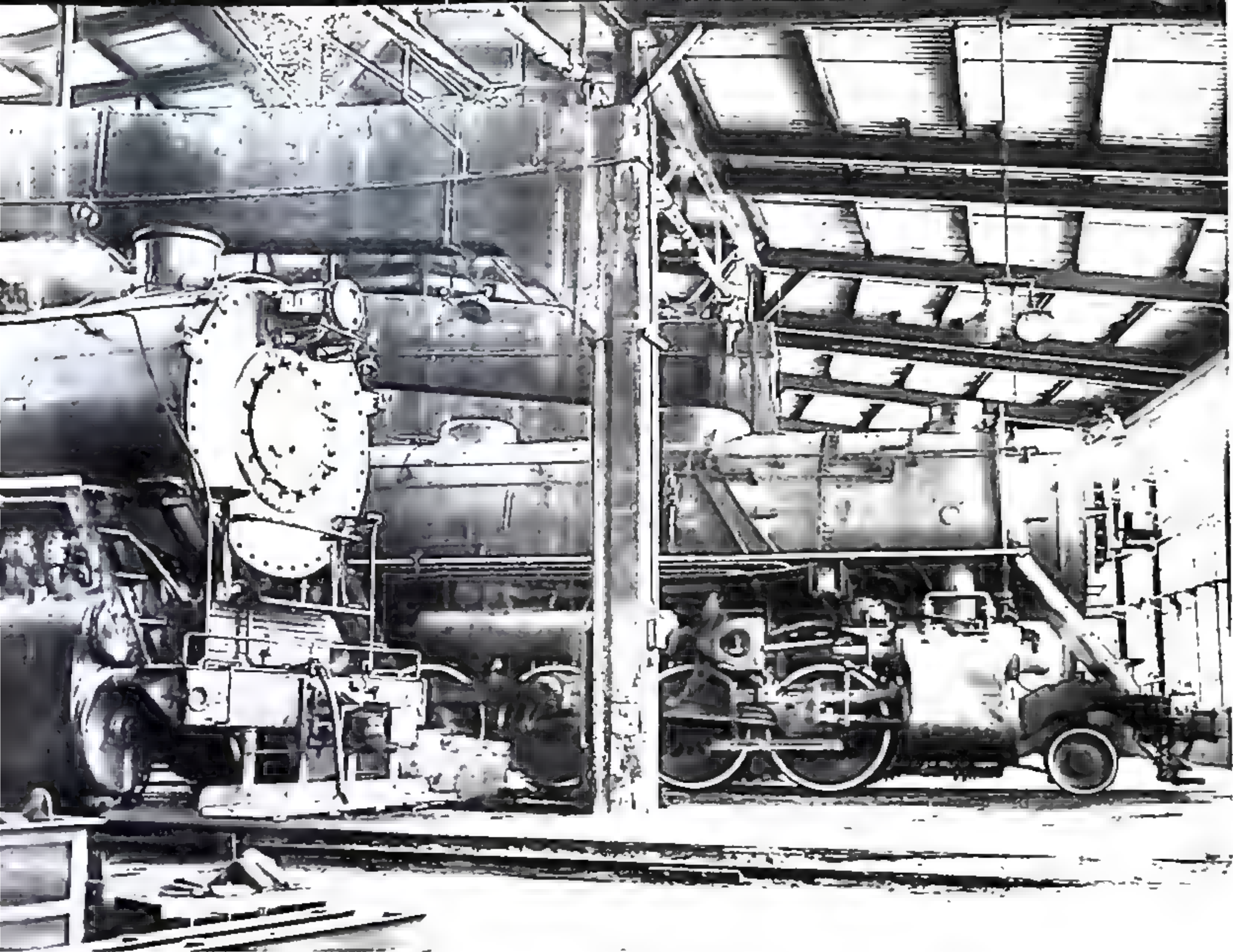
fleet of another Upper Michigan line, Calumet & Hecla: three DS-4-4-1000's and an S12. The photo shows two of the former C&H DS-4-4-1000's flanking E&LS's S8 No. 102. Today E&LS operates 347 miles reaching from Green Bay, Wis., to Lake Superior, but all three of these units are believed to remain on the property.



Quincy & Torch Lake: Hancock, Mich., October 1970

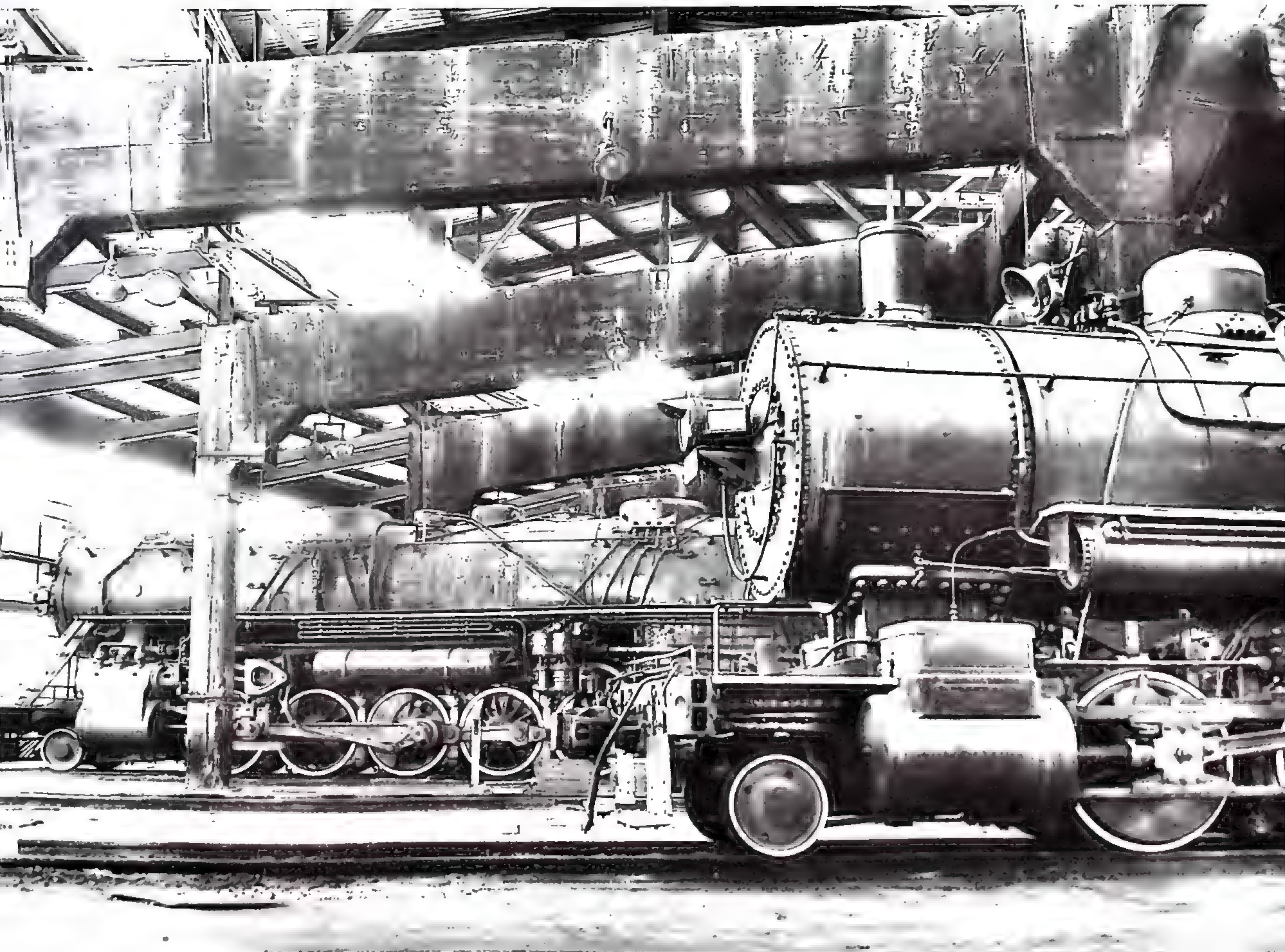
When the Quincy Mine shut down in 1945, four 3-foot-gauge steam locomotives were left inside the stone roundhouse on the hill above Hancock on Upper Michigan's Keweenaw Peninsula. Incredibly, 25 years later they were still there. Outside, a plow, caboose, enclosed water tank, and dozens of ore cars remained as they had been left. Here we see 2-8-0 No. 5 (closest to the camera), built in 1891 by Burnham, Parry, Williams & Co. for the nearby Hancock & Calumet and acquired by Quincy in 1908, and 2-6-0 No. 1, an 1889 Brooks product. Just out of sight to the left were 2-6-0 No. 3 and 2-8-0 No. 6. All engines survive today, although the opportunity to

preserve the 6-mile long railroad (known as the Quincy & Torch Lake, although strictly an industrial railroad in its later days) was lost when the rails were lifted and the engines dispersed for display. The two engines in the photo were pulled out and left in the open a few hundred yards away, adjacent to the Quincy Mine Steam Hoist Museum. Consolidation 6 (Baldwin, 1912) went to the New Jersey Museum of Transport in 1975. The remaining engine, Mogul 3 (Brooks, 1894) had been in the process of overhaul—its drivers were sitting outside the roundhouse in 1970. The parts were gathered up and sent to the Huckleberry Railroad tourist line at Flint, Mich.

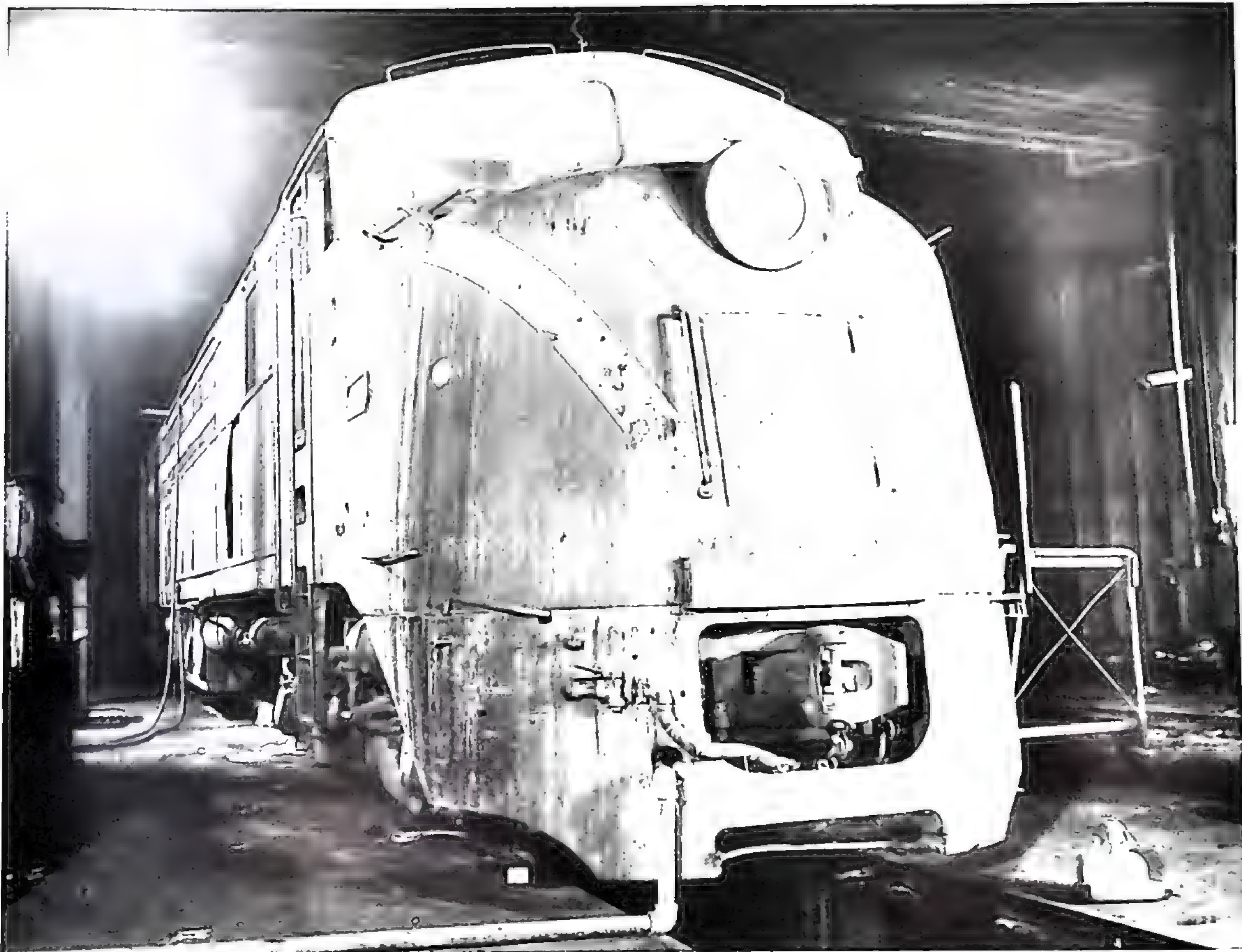


Bessemer & Lake Erie: Greenville, Pa., July 1974

The Bessemer & Lake Erie had two large roundhouses in Greenville, and by the 1970's one was used solely for storage. Among the odds and ends inside were three steam locomotives, with 2-10-4 643 (Baldwin, 1943) as the centerpiece. To the right of 643 sat 0-10-2 604 (Baldwin, 1936), built for the Union Railroad and later assigned to the Duluth, Missabe & Iron Range before winding up on the B&LE (U.S. Steel owned all three roads). On the other side of 643 was 2-8-0 154, the smallest and oldest of the lot, having been built for B&LE in 1909 by Burnham, Williams & Co. (Baldwin). All three survive, but only No. 604 is still in Greenville, on display at the B&LE depot. No. 154 is at the Henry Ford Museum in Dearborn, Mich., and No. 643, privately owned, is stored in McKees Rocks, Pa.







Central Railroad of New Jersey: Communipaw, N.J., January 1968

We had made a late-night trek over from Long Island on the strength of a rumor that former Canadian Pacific 4-6-2 1238, privately owned and in fantrip service, was under steam at the roundhouse outside CNJ's Jersey City terminal. The rumor was true, and after dutifully photographing the Pacific, we searched the far recesses of the house for an urban legend—the last remaining dual-cab 2000 h.p. Baldwin “baby-face” commuter-service diesel that was supposedly supplying steam to heat a portion

of the building. And there it was—CNJ 2004, model DRX-6-4-2000, delivered in late 1948 and the last survivor of the six built (all for CNJ). The twin-engine locomotive rode on a pair of six-axle trucks of A1A configuration and had not seen service for over a decade. The pipe leading from the pilot lends credence to the story about supplying steam to the roundhouse as the reason for its survival. Alas, this is one that got away, as the 2004 was reported scrapped later that year.

Soo Line: Shoreham shop, Minneapolis, Minn., December 1974

The Alco era on the Soo Line was ending by the time of this photo, and three of the veteran locomotives have come home one last time before disposition. Their active days on the Soo are over, and they have apparently been herded under cover for inspection by prospective purchasers. Nearest the camera is RS1 2361, still in its original livery of black with yellow-striped ends; it went to Alter Barge in nearby St. Paul. Barely visible in the far

corner is RS1 351, which went on to a new career as Maryland & Delaware 23. In the middle is RS2 371, wearing the red-and-white scheme Soo adopted in 1962. It started life as RSC2 369, trading its six-wheel trucks for a pair of four-wheel ones and changing model designation as well as road number. The RS2's 244 engine was not as highly regarded as the 539's in the RS1's, so No. 371, newest of the trio, was scrapped. ■

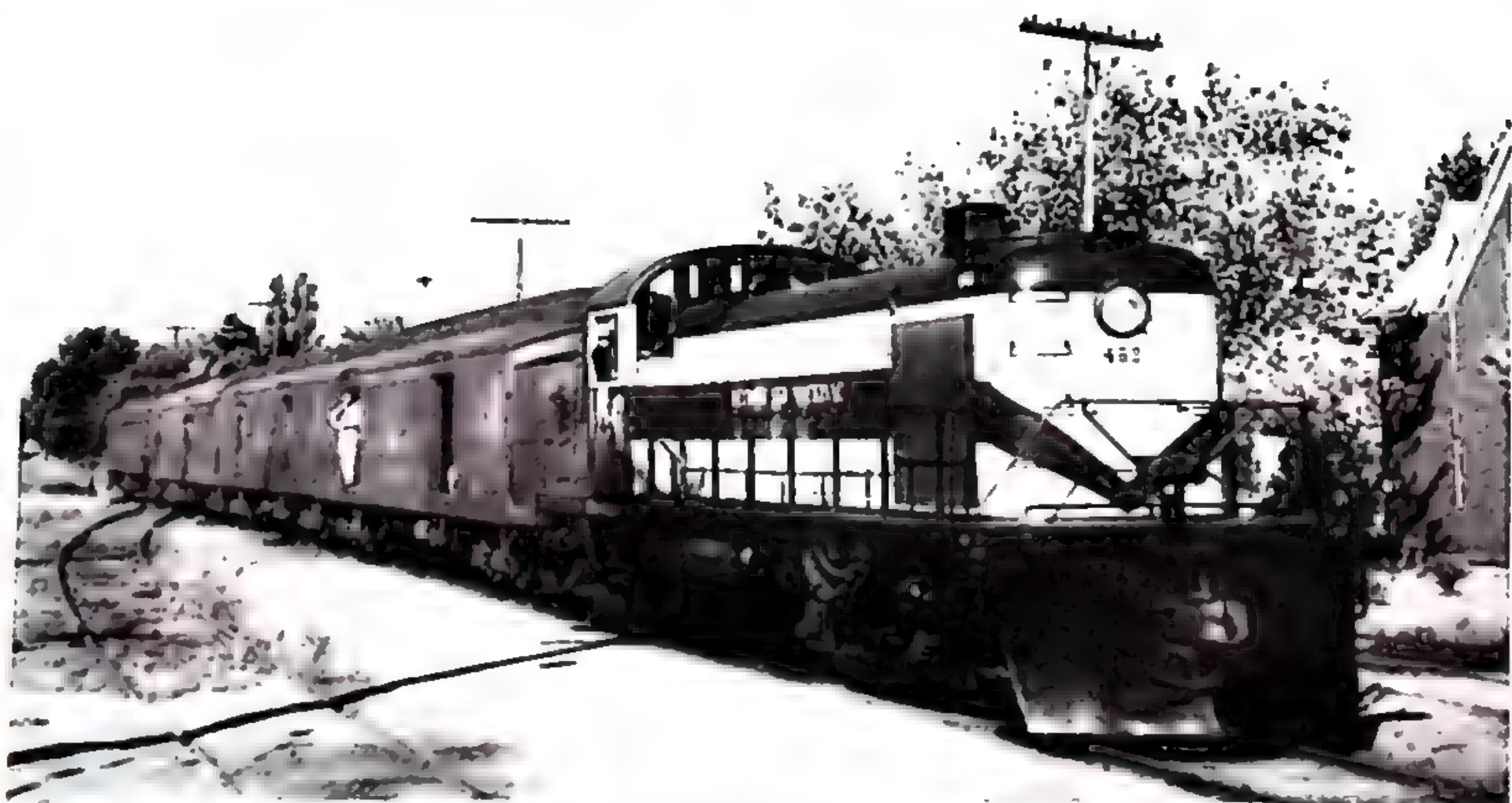
1951: Passenger positives, lots of new diesels



MERT LEET

NAME THAT TRAIN: Soo Line's former nameless Chicago-Duluth train, pictured backing into B&OCT's Robey Street coach yard in Chicago in February 1952, gets a name, *Laker*. Great Northern, eschewing winning public-contest names *Evergreen* and *Eight-State*, chooses the name *Western Star* for its new Chicago-Seattle streamliner to replace the *Oriental Limited*. The *Star* receives cars from GN's *Empire Builder*, while the *Builder* gets brand-new equipment. Boston & Maine and Maine Central apply 25 train names to 45 of their passenger trains in northern New England, alphabetically from *Androscoggin* to *Winnepesaukee*.

MORE NEW VARNISH: Santa Fe introduces an all-new *Super Chief*, including Turquoise Room dome-lounge cars. B&O puts two Budd sleeper-observation "Strata Dome" cars (ordered by C&O, diverted to B&O) on the *Capitol Limited*. Southern receives 21 passenger cars from ACF: 3 baggage-mail cars, 4 baggage-dormitories, 11 coaches, and 3 diner-lounges.



R. STERR

THE DOWN SIDE: Among all the passenger-service positives detailed at left, there are some negatives, too: Detroit & Mackinac's last varnish, daily-except-Sunday Bay City-Alpena trains 39-40 (that's 40 at Tawas City in 1950, above), makes its final run March 31. San Diego & Arizona Eastern runs its last passenger train January 11, and Nickel Plate drops its last train to Peoria, Ill., from Lima, Ohio, on June 30.



JIM SCRIBBINS

DIESELS POURING OUT: Alco-GE's four-unit demonstration team of 1600 h.p. green-and-yellow cab units—what we'll come to call FA2's (pictured above in Los Angeles on February 7)—are among many new diesels to hit the road. (During January-October of the previous year, more new locomotives—1915 diesel, 9 steam, 8 electric—were put in service than in any same period in 27 years, and the trend continues.) In the largest order to date, New York Central signs up for 387 total diesel units from EMD, Alco, Fairbanks-Morse, and Baldwin-Lima-Hamilton. NYC also puts its first 12 new GP7's into emergency service at Cleveland when an accident takes down some Union Terminal catenary; 5600-5607 will then go into freight duty, 5608-5611 onto Toledo-Columbus passenger trains. Chicago & North Western buys EMD's three GP7 demonstrators, 100, 200, and 300, and puts them—as C&NW 1518-1520—in Chicago suburban service; C&NW has 30 total GP7's. Central of Georgia's two new E8's go into Chicago-Florida pool service with IC, still in gray and blue although they'll eventually be repainted IC orange and brown.

MOTIVE-POWER MILESTONES: Lima Locomotive Works, now a Baldwin-Lima-Hamilton property, builds its last locomotive, Pennsylvania 2400 h.p. center-cab transfer diesel 5683. Lehigh Valley completely dieselizes on September 14. Ontario's Algoma Central gets its first diesels, Canadian-built GM GP7's 150-154. EMD delivers its 10,000th diesel-electric unit, Wabash E8 1009. New Haven, previously all-Alco in diesels, orders 10 2400 h.p. Fairbanks-Morse C-Line cab units. Davenport builds what will be its two largest diesels (and only ones this size), 1000 h.p. center-cabs 798-799 for Rock Island; they have two 500 h.p. Caterpillar V-12's. Union Pacific orders 10 gas-turbines from Alco-GE, but C&O scraps its 3 steam turbine electrics.

IRON HORSE TRADING: Virginian buys 14 0-8-0's from Chesapeake & Ohio, and Pennsy leases 3 2-8-4's and 9 4-8-4's from Richmond, Fredericksburg & Potomac.



BOB BULLERMANN

MID-AMERICA BIRTHDAY: To help commemorate its centennial, Illinois Central mounts across its system medallions with map and emblem, either in stones on depot grounds (as at Amboy, Ill., above) or in blocks on depot walls. A pocket-size medallion is also issued.

CONSTRUCTION PROJECTS: Improvements to physical plants continue as Rock Island builds a new 5-mile cutoff in Denver, from Sandown to Rio Grande's North Yard; SP works on a new yard at Roseville, Calif.; and Milwaukee Road installs 67 miles of CTC signaling in eastern Iowa, Marion to Green Island, and pulls up the second main track.

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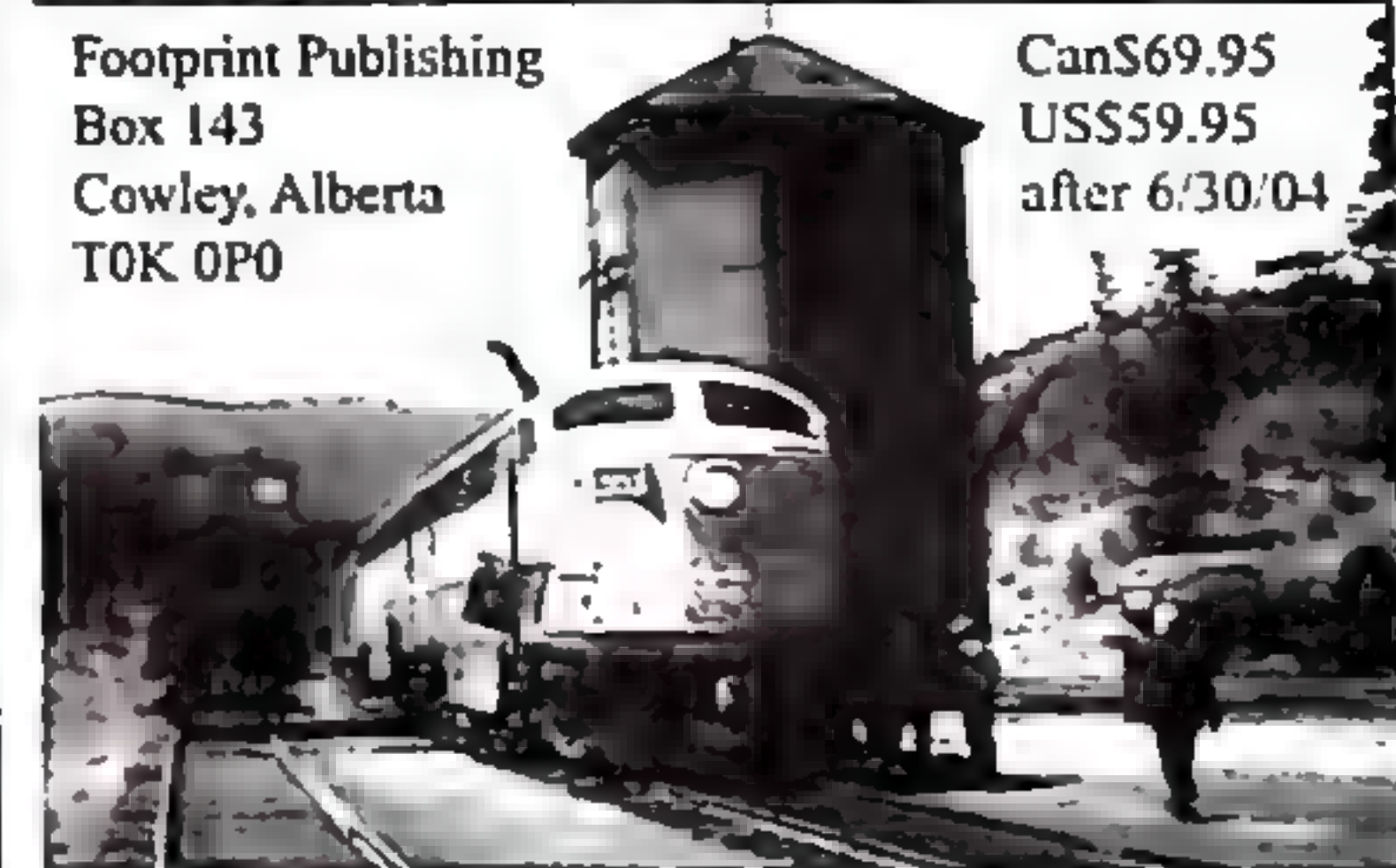
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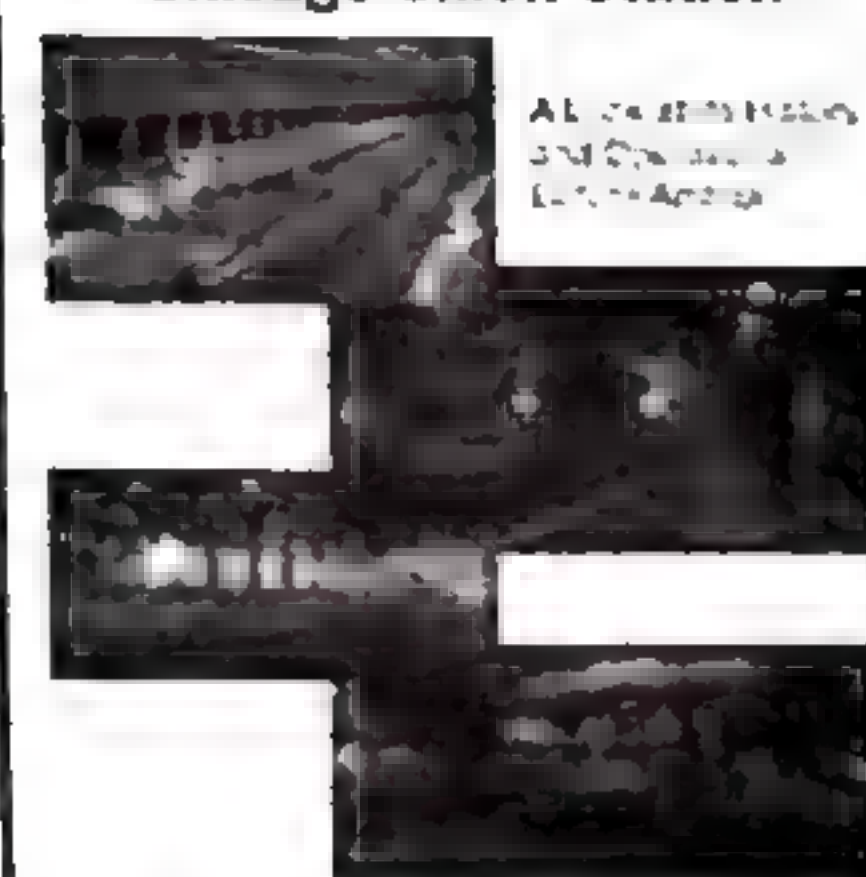
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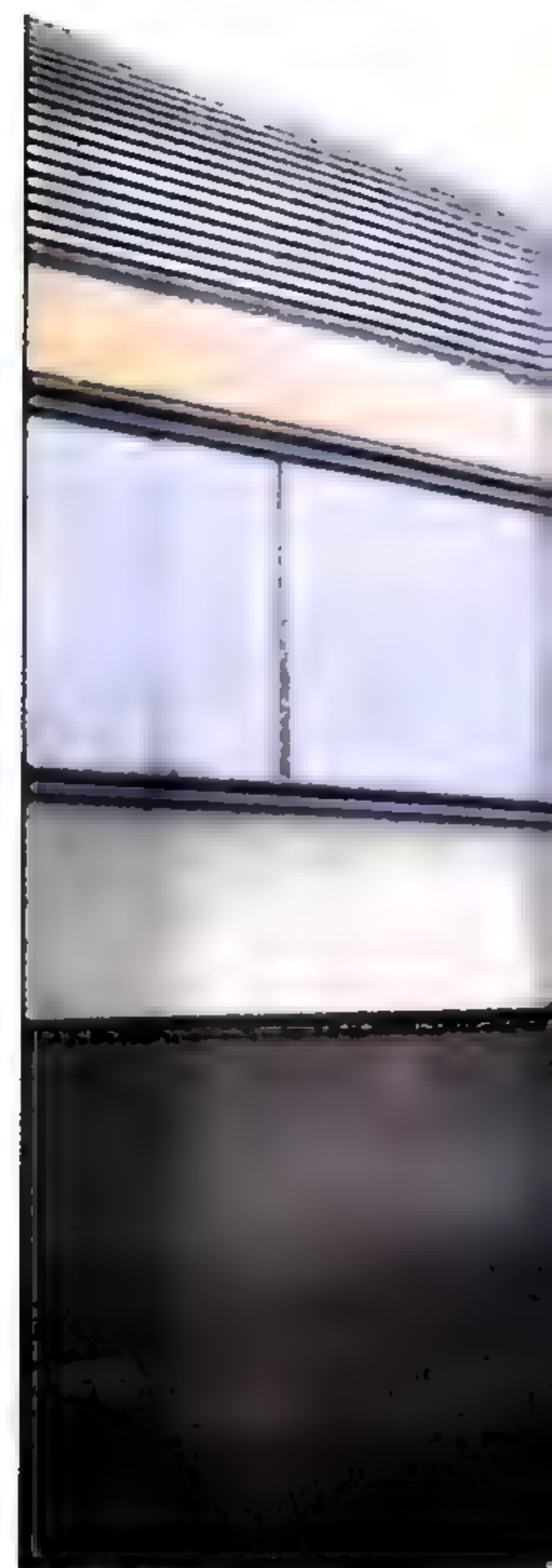
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Previewing a future that never was

C&O proudly showed off its steam turbines, then cancelled their train and quietly scrapped them



WHEN ROBERT R. YOUNG took over control of the Chesapeake & Ohio, he started looking for ways to improve the railroad. After World War II ended, Young decided he would focus on the passenger trains to meet his goal. One of Young's boldest moves in this area was his decision to create a new all-daylight train to run between Washington, D.C., and Cincinnati in 12 hours. The Budd Company was contracted to furnish the cars, and Baldwin-Westinghouse was hired to design and build a trio of steam-turbine-electric locomotives to pull the train [see pages 28-29]. It would be called the *Chessie*, the name of C&O's longtime fictitious mascot cat.

Baldwin delivered the first of the steam turbines in 1947, and the C&O took the opportunity to promote the futuristic new locomotives. In 1948, two more turbines arrived and Budd began to deliver the passenger cars. The C&O sent the first of the turbines, the 500, and one of the new *Chessie* diners to the Chicago Railroad Fair of 1948-49.

Young was so proud of the new train that the C&O started to put together two trainsets to make a system-wide tour. He felt the tour would allow thousands of potential customers to see the train and, it was hoped, decide to use it. One of the trainsets would tour on C&O's recently acquired Pere Marquette lines in Michigan. The other would be displayed at points along the train's intended route, including Charlottesville and Clifton Forge, Va., and Charleston and Huntington W.Va. People were impressed with the train, and young children who toured it still remember what they saw.

The *Chessie* never went into service, and C&O sold many of its cars to other railroads. For a time, it used the turbines on other passenger trains. One assignment was on train 47, the Norfolk (Va.) section of the *Sportsman*, from Clifton Forge to Hinton, W.Va., where the turbine was taken off because there wasn't a coaling station on the westbound track. The turbine then continued west to Cincinnati on train 5, the Washington section of the *Sportsman*. Another assignment was between Clifton Forge and Charlottesville on

Sportsman trains 4 and 47. They also handled train 2, the prestigious *George Washington*, from Cincinnati to Clifton Forge.

It was on one of the eastbound runs that a young Arthur Hoffman saw a turbine passing his house near Cabin Creek Junction, W.Va., during the night. The giant locomotive's wheels were glowing with rings of fire around them as it slipped by, and the roar of the turbine was very noticeable.

As the railroad used the 500's in service, their many problems became apparent. J. H. Workman, a machinist the C&O assigned to work on the turbine project, recalls that the constant draft in the firebox made it hard to keep the flues clean. Firemen were used to conventional steam locomotives, where the chuffing action would keep the flues open, and they had a hard time adjusting to the turbines. Screening at the rear of the locomotives would become plugged with cinders. Workman had problems finding people to work on the turbines, and remembers they had a tendency to de-



THREE PHOTOS: OGDEN WILLIS; WILLIAM J. SPARKMON COLLECTION



Townpeople at South Charleston, W.Va., inspect C&O 500, first of the road's trio of colossal steam-turbine-electric locomotives intended for its new *Chessie* train, on a dreary December 4, 1947. Low ridership forecasts scuttled the *Chessie* before it ever ran, and myriad technical problems ensured an early, ignominious death for the train's futuristic-looking motive power.

rail in yards, even at slow speeds.

On one occasion, a publicity opportunity turned into yet another headache. A turbine and a passenger car were moved from Clifton Forge to Charlottesville for a magazine photo shoot. The train traveled the hilly Mountain Subdivision, and after the train returned to Clifton Forge the turbine was inspected. While in the shop, cracks were discovered on the wheels. This kept the locomotive out of service for two weeks.

In the end, C&O determined that there were too many problems with the turbines and the cost of operating them was greater than for modern conventional steam engines, to say nothing of diesels. The three turbines were unceremoniously scrapped.

After the turbines had gone, Workman traveled to Roanoke, Va., where Norfolk & Western locomotives were designed and built. There he saw parts from the C&O locomotives being used

on the N&W's own steam-turbine locomotive project [pages 32-33].

Robert R. Young left the Chesapeake & Ohio in 1954 to head the New York

Central, leaving those who toured the *Chessie* cars and inspected its locomotives with memories of a future that never was.—William J. Sparkmon

The towerman was a kid

Thanks to darkness, the bosses never knew that a boy was doing a man's job

IN 1954, when I was 14 years old, my family moved to within a few blocks of Southern Pacific's Glendale Tower north of Los Angeles. I soon became friends with the second-trick towerman, and shortly I learned the operations of the tower. It was a Saxby & Farmer interlocking plant, with all the signals and switches controlled by four-and-a-half-foot-long levers. The levers were connected to the switches and signals by long rods which ran on rollers along the ground. Sometimes I would have to use all of my weight to move those levers. This type of interlocking

was nicknamed an "armstrong," as it took strong arms to operate the levers.

At Glendale, the double-track Pacific Electric crossed the SP's main line to San Francisco and Sacramento, also double track. There was also a turnout on the SP, where its inbound freight trains were routed into the Los Angeles Yard. The outbound commuter rush on the PE was at the same time as the busiest time on the SP. Both railroads competed for time on the diamonds, although the SP had the preference, as all SP trains were superior to PE trains. As a junior-high-school kid, I was in my

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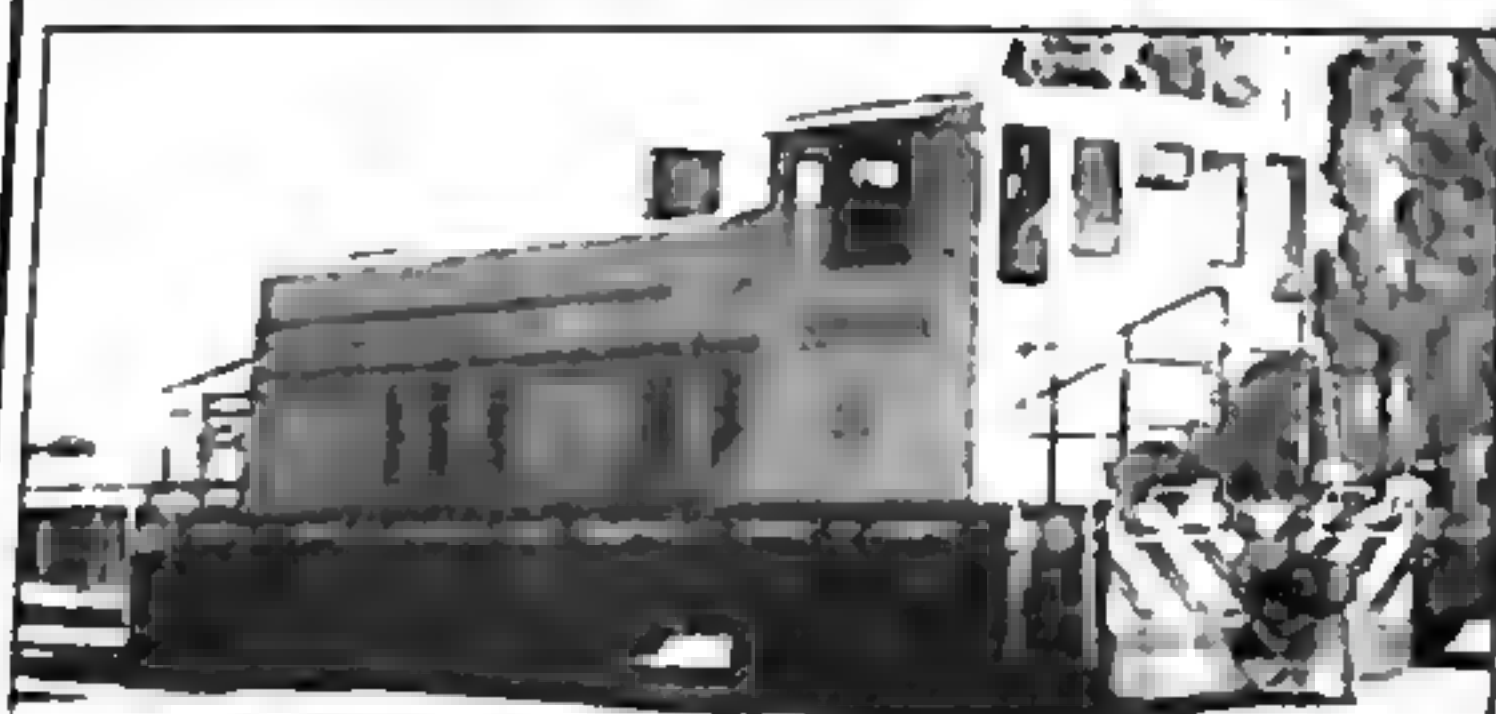
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The Way It Was



The weather's clear and the track is fast!

HERE's a day at the races, railroad-style. On a crisp morning in September 1940, two commuter expresses tear non-stop through Ridgefield Park, N.J. On the left is a New York, Susquehanna & Western train, hauled by Pacific type 2514, a

glory. After a while, the towerman grew confident of my skills.

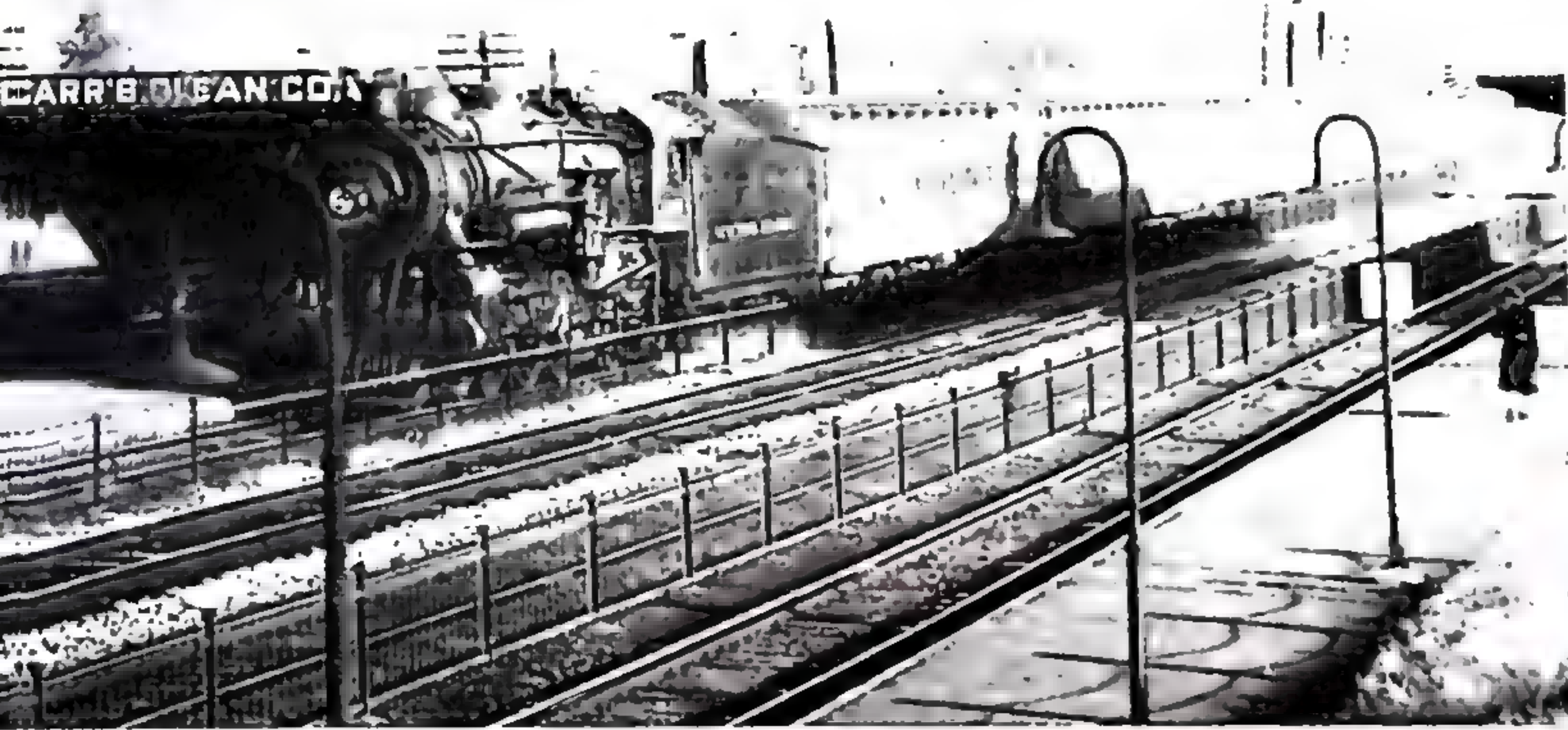
One evening, the eastward semaphore would not clear for SP train 98, the *Coast Daylight*, from San Francisco. This was one of the hottest trains on the line. I got an old kerosene lantern with the yellow globe from its hook on the wall. The towerman lit the lamp and I went down the stairs to flag the train. I checked the SP yard switch and the derails. They were all lined correctly. I could see that the semaphores and derails on the PE were also in the proper positions.

I then bravely highballed the train, with a lamp signal. The engineer then acknowledged my signal, by two blasts of the air horn on his GS-class 4-8-4.

The Mars light swept its beam, os-

cillating in a figure eight, ahead of the engine. Soon, the sharp crack of exhaust blasted from the smokestack, and the streamliner crept forward. The 80-inch drivers soon clattered over the diamonds. The beautiful red, orange, and black streamliner slowly glided past me. The round-end parlor-observation car would soon be past. Just think: a simple signal from a kid with a lantern swept this beauty into motion.

To my surprise, though, the regular observation car was not there. In its place was the *Sunset*, the SP president's private car. As it passed, I saw three officials on the rear platform. They gave the highball signal to me with their battery lanterns, and I returned the signal with my kerosene lamp. Then they turned away and went back



FRANK QUIN

former Erie engine relettered SUSQUEHANNA but retaining its Erie number. To the right is a West Shore Railroad (New York Central) express with NYC light Pacific 4568. Though the NYS&W and West Shore parallel each other for just a few

miles, the two iron horses are giving every indication of a spirited race. Soon, most passengers on these trains will transfer to buses or ferries to take them under or across the Hudson River and into Manhattan.

into the car. I went back upstairs to the tower.

It was lucky that this happened in the winter, when it was dark at that time of the evening. The suits never realized that they had been flagged by

a kid. If they had, my towerman friend would probably have been fired.

Adventures like these from the mid-1950's are only distant memories today, yet 50 years later they are indelible in my mind.—David M. Morgan

Incident at Tucson

A turntable derailment tied up the roundhouse—and provided a study in human behavior

I HAVE BEEN collecting old black-and-white railroad negatives for nearly 30 years. When I receive a new batch, it's like Christmas, opening the package and sorting through the stuff. You never know what surprises will turn up.

The accompanying photo [following pages] of Southern Pacific cab-forward

4-8-8-2 4173 is one of my favorite surprises. It was taken by the late Roger S. Plummer of Sulphur Springs, Texas.

Plummer traveled a lot in the 1950's and had access to terminals and roundhouses. The negative envelope said simply, "Tucson, 1950. Engine runs off turntable."

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ROGER S. PLUMMER SR.; GORDON C. BASSETT COLLECTION

"Ho-hum," I thought, "a cramped view with the drivers hidden by the turntable girders." But as the print shows, the 4173 was not just rolling off the table, it had derailed. As most railfans over the age of 50 know, this was not a desirable event. Such a derailment could tie up a busy engine terminal for hours, with disastrous effect upon the railroad. The immediate effect was to bring more attention from the high brass than the roundhouse foreman wanted or needed.

My enjoyment of this photo was enhanced by two factors. First, I was an Army officer for 20 years. Experience taught me that if you had a major obstacle delaying the mission which required a lot of hard grunt work to clear up, you soon had an unwelcome audience of brass full of advice, but not about to get their hands dirty.

Second, I had a brief but wonderful time on a short-line railroad. Paul, our superintendent and general factotum, always said, "Watch out for The Suits." Anyone dressed in office attire usually meant trouble.

So, here we have a crisis. A lot of

hard work will be required to clear it up. There are at least 16 men at hand. At least three of them are "Suits," which could include a terminal superintendent or his assistant, perhaps a special agent, or someone from the dispatcher's office. The fellow in the leather jacket could be a trainmaster. Next to him is a man in a white shirt—another "brass hat"? Either the man in overalls and faded cap on his left, or the one squatting down to the right of Leather Jacket is probably the foreman who is actually in charge of the operation. No telling who the fellow in Levi's next to the welding cart might be, but he seems to have words of wisdom for someone in the pit. We have a half dozen other laborers observing or ready to pitch in, and probably a few more down in the pit.

And above them all, patiently waiting in the cab window, is the hostler. His cap visor shades his face, so we can't see his expression, but his general appearance seems to say, "Who me? Would I derail a Malley on the turntable? Never!"

So, here we have a snapshot of the

When SP 4173 derailed on the turntable at Tucson, "Suits" and laborers reported to the scene.

railroad in crisis. A lot of hard work to be done, and a large part of the chain of command on hand to "help." It is instructive that about half of these gentlemen have their hands in their pockets or on their hips. It would be interesting to know how long the 4173 tied up the roundhouse.

To me, this photo is a classic. I have hundreds of shots of steam locomotives that are just good engine portraits. But occasionally one comes along with a story to tell.—Gordon C. Bassett

'Like the Grapes of Wrath back there'

Transcontinental coach travel, 1943

DURING WORLD WAR II, I had come up from Camp Roberts in the Salinas Valley of California on the Southern Pacific's Coast Route to San Francisco.

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HAL LEWIS

Passing trains on the B&O

Planning and luck made for two memorable photos

HAL LEWIS was riding Baltimore & Ohio train 76, the east-bound *Cincinnatian*, with his camera one day in 1950. He recalls, "I knew the east- and westbound *Cincinnatians* normally passed each other near Wolf Summit, W.Va. (west of Clarksburg), so I asked our coach attendant if he could open the Dutch door to see if I could get a lucky shot. He obliged, and sure enough, in a couple of minutes we spotted westbound No. 75 as we were on the inside of a curve." Lewis' timing was right in more ways than one, for later that year, the *Cincinnatian's* twin consists and four streamlined Pacifics were shifted from the Baltimore-Cincinnati run to a Detroit-Cincy routing.

William E. Hopkins hired on as a machinist helper at Washington Terminal's Ivy City shops in June 1953. "On my days off," he says, "I would often take cab rides. My favorite was to ride the B&O from Washington to Grafton, W.Va. I would ride west on mail-express train 29, spend several hours photographing trains at Grafton, then return on train 12, the *Metropolitan Special*. In August 1954 I was aboard 29's lead engine, F7 283. We had just passed Salt Lick Curve descending Cranberry Grade when two eastbounds, each headed by a three-unit set of F units, came into view. Grinding up the outside track was a coal drag, while a 'Timesaver' hotshot was coming up the middle. Both trains had four-unit F7 helpers." Multi-train steam-era photos at Salt Lick are legendary, but this view shows the drama did not die when the 2-8-0's retreated.



WILLIAM E. HOPKINS

After crossing the bay on the SP ferry, I cashed my meal ticket for supper at the SP lunch counter on the Oakland Mole. In the evening I found my place on a troop sleeper that, along with another troop sleeper and a kitchen car, was cut in the middle of the SP-Union Pacific-North Western *Challenger*. At this time the *Challenger* was the third-tier train between Chicago and the West Coast. On the first morning, we had crossed the Sierras and had made up our bunks to daytime configuration and had our breakfast.

One of the white-coated coach attendants was coming back from the rear of the train, and he met the conductor in our car. They stopped for a moment.

"How is it back there?" asked the conductor

"Like the *Grapes of Wrath*," the attendant responded, invoking the title of the John Steinbeck novel and 1940 motion picture.

The men continued on their way. Since I was single, fed, and momentarily happy, it took me a while to understand this exchange. But it was for real. In those days, the folks traveling coach on a third-tier train were either servicemen traveling independently, or more likely the wives of servicemen being transferred—the latter often with small children or infants, few resources, and desperately trying to keep up with their husbands. The words fit.—Ken Rohde

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I AM A FANATIC when it comes to preserving old paperwork related to railroad operations and history, as attested by a cluttered basement. I tell my wife, who is sometimes a bit skeptical, that there is always some interesting history in these old documents, although I am sometimes hard-pressed to come up with a specific example. However, the value of preserving old documents,

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The Way It Was

even routine telegrams and transportation notices, was reinforced by Paul Shea, Collections and Programs Director of the Yellowstone Historic Center at West Yellowstone, Mont. When the YHC was organized and opened its Museum of the Yellowstone in 2001 at the former Union Pacific depot at West Yellowstone, Paul came across boxes of old telegrams and other routine paperwork dating back to the 1930's. When he had time, he read through some of them to better understand how the trains were operated into West Yellowstone during the summer months. One of the stories he uncovered caught my interest.

To understand the story, it is first necessary to give a little history of the railroad at West Yellowstone. Located at the western boundary of Yellowstone National Park, it was the terminus of Union Pacific's Yellowstone Branch, built specifically to transport tourists to the park in the summer months. The line was completed in fall 1907, and in the following summer the railroad began providing passenger service to the park. The Yellowstone Branch was snowed shut in the winter months, and there was no regular passenger-train service to West Yellowstone in the fall and spring months.

The "other" railroad which reached the park was the Northern Pacific, which ran to Gardiner, at the North Entrance to the park. Both roads competed for business to the park over the years, with the NP offering service from the Pacific Northwest and Chicago, while the UP offered service from California and the Midwest.

While the railroads provided service to the park, a separate company provided the transportation within the park and lodging there. The Yellowstone Park Association was formed by the NP to provide comfortable facilities and transportation arrangements for the tours in the park. The YPA built the famous Old Faithful Inn, which is still open today.

In 1909 the Yellowstone Park Association changed its name to the Yellowstone Park Hotel Company, and in 1936 it became the Yellowstone Park Company. Over the years the railroads

providing passenger service to the park worked together to support the services in the park and to offer tour packages. The Yellowstone Park Company and the predecessor companies hired summer help every year to operate the transportation, lodges, and other businesses. The YPC went to great efforts to hire young, enthusiastic workers from all over the country. The employees were typically college students or young teachers who wanted to earn money while spending a summer in the "Wild West."

Every spring, just before the tourist season began and before the railroad started running scheduled passenger trains to the park, the Union Pacific would run a special train from California specifically to bring the summer workers to the park. Known as the "Yellowstone Park Employees Special" or by a similar name, the train would bring in several hundred employees in early June. The NP ran its own special train, from St. Paul, Minn., which was unofficially, but significantly, known as the "Savage Special."

The UP's train in the early 1950's was described in one of the Transportation Notices that Paul Shea found in the attic of the West Yellowstone depot, and it shows how the railroad operated this special train in those days. It also gave an indication of what challenges the railroad faced in operating a train full of young students who were full of energy.

The UP scheduled the train to take 30 hours to go from Los Angeles to West Yellowstone, and in 1951 the train was to bring in about 315 people. The train consisted of a baggage car, two coaches for women only, five coaches for both men and women from Los Angeles, another mixed coach from Salt Lake City, a café lounge, a snack car, and a standard 12-1 sleeper from L.A. Originally the train was to have another 12-1 sleeper and a 14-section standard sleeper from L.A., but these two cars were dropped because of lack of interest.

The Transportation Notice discussed the typical instructions, such as, "Sufficient coach porters should be assigned to maintain coaches in best

possible condition," that "Cars to be fully watered and iced at all times," "All concerned should watch this movement carefully, extending proper courtesy and attention," and so forth. It also specified that the train should not arrive at West Yellowstone before 1:30 in the afternoon, presumably so the buses would be waiting at the depot. After all, who would want 300 college students milling around the depot waiting for the YPC buses to arrive? If nothing else, there were bars directly across the street from the depot, and one can assume the drinking age was not a real concern in this remote Montana town.

But the last item in the instructions was perhaps the most interesting, and shows that students haven't changed in 50 years. It read, "Mr. Howard B. Brown, Mgr. Hotel Dept., Yellowstone Park Company, requests vestibules be

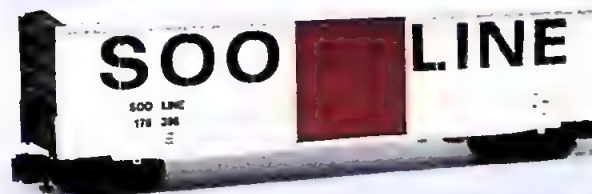
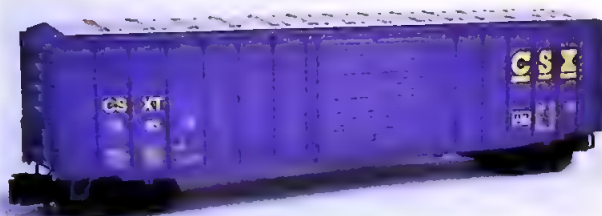
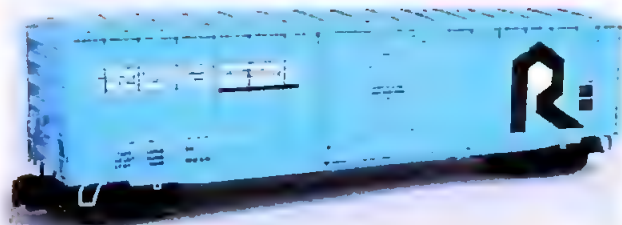
kept closed while train standing at Las Vegas Station as in past years several employees have missed train."

Reading between the lines, it is obvious that the temptations of Las Vegas were simply too much for some of the Yellowstone summer workers, and they couldn't resist the opportunity to do just a bit more gambling than the duration of the stop allowed. What is even more interesting is that the same instructions for the year 1955 had the same words concerning keeping the train vestibules closed at Las Vegas, showing this was not a one-time occurrence or concern. One can imagine what led up to this specific instruction in the Transportation Notice and the anguish the summer help must have gone through while the train was being serviced at Las Vegas—cooped up in the cars with the vestibules closed. So close and yet so far.

Documents such as this routine Transportation Notice give a good idea of how special trains were handled in those days. Not only was the consist listed and the standard instructions given, but the special attention given by the railroad to this type of operation is worth noting and saving for posterity. Although the park concessionaire continues to hire students every summer from all over the country, the special trains can never be duplicated today for a multitude of reasons. The tracks to West Yellowstone and Gardiner are gone, and public transportation is not used in this manner since the summer employees almost always have their own vehicle.

So save that paperwork—you will never know when good, historical information has been recorded and buried in routine documents.

—Thornton Waite **1**



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Birney bastion in Indiana



THREE PHOTOS: BARNEY L. STONE, KRAMBLES-PETERSON ARCHIVE COLLECTION

In the mid-1940's, Marion, Ind., 60 miles northeast of Indianapolis, had a population of 31,000 or so. Six decades later, the Grant County seat's census figure is about the same, but something's missing: the orange Birney streetcars of its transit system. The city's street railways dated to the 1880's, and for most of their history were part of the Union Traction Company of Indiana. UTC's abandonment of its last interurban route through town in 1932 signaled the end of city service as well, but Marion wasn't ready to lose its trolleys. Local interests, including employees who worked for reduced wages, formed Marion Railways, Inc., and continued service with a fleet that eventually numbered 25 cars, all Birneys. Developed in 1915 by Charles O. Birney, the 28-foot, four-wheel cars found wide acceptance, especially on light-density

lines where the economies they offered were especially important; more than 6000 were built before production ended in 1930. About half of Marion's cars were bought new by UTC, with the remainder coming from Detroit and Grand Rapids, Mich.; Springfield, Ill.; St. Petersburg, Fla.; and Aberdeen, S.Dak. Marion's streetcar system made it through World War II but was shut down in 1946, when buses took over. In three views from August 12 of that year, cars 7 (left), 12 (above left), and 14 are seen on a tree-lined street and in two locations on the courthouse square.

Big night on the Columbus & Greenville

Crossing collision + Baldwins + Rambler headlights = Favorite photo



LOUIS SAILLARD; LIGHTING ASSISTANCE, DANIEL F. WATSON JR.

LOUIS SAILLARD, author of our "Fallen Flags Remembered" story on Mississippi's Columbus & Greenville [pages 14-17], had a chance meeting with two of the C&G's distinctive Baldwin road-switchers, which at the time were enjoying a temporary return to the top assignment on the road:

"On December 2, 1971, the Columbus & Greenville's two most modern locomotives, SD28's 701 and 702, hit a gravel truck at a road crossing in Kil-michael, Miss. The trailing 701 stayed on the right of way, but lead unit 702 took out a large pecan tree and landed in a back yard, at a 90-degree angle to the track. While the cab of the truck was crushed, the driver was only slightly injured.

"With C&G's future up in the air because of delays to the pending Illinois Central/Gulf, Mobile & Ohio merger, the diesels were simply rerailed and stored at C&G's Columbus shop. They would ultimately be sent to IC's Paducah (Ky.) shop for repair.

"Unaware of this, I arrived in Columbus on March 24, 1972, for what turned out to be my last visit to the old

C&G. That evening, through freight 51 was made up for its trip to Greenville with Baldwins 605 and 604 on the point. This seemed certainly worthy of photos, but neither my traveling buddy, Daniel Watson, nor I had thought to bring any flash gear for night photos.

"Not to be thwarted, we backed the rear wheels of his 1964 Rambler station wagon into a ditch to elevate the headlights and illuminate the lead Baldwin. We asked the engineer to turn on the 605's headlight and placed my Rollei squarely on the roof of the Rambler. An exposure of one second (with Tri-X film) miraculously yielded what turned out to be my favorite C&G picture.

"The next morning a shop worker told us that one of the SD's was repaired and on its way home from Paducah. The days of the Baldwins on through freights 51 and 52 were numbered. As it turned out, the old C&G itself had only six months to live."

HT&W theft; reward offered

As mentioned in our story [pages 36-39] on the Hoosac Tunnel & Wilmington, the little line hosted what is con-

Lit by Rambler-light, Columbus & Greenville 605 stands at the head of freight 51 in March 1972.

sidered to be the first U.S. railroad fan trip. On Sunday, August 26, 1934, the National Association of Railroad Enthusiasts, a forerunner of today's Mass Bay Railroad Enthusiasts, Inc., organized a trip to the HT&W. Passengers rode Boston & Maine Boston-Troy train 67 to East Portal, Mass., where there they boarded an HT&W special for the trip to Wilmington, Vt., and back. They returned to Boston on B&M train 62.

On August 26, 1984, exactly 50 years later, Mass Bay RRE sponsored the "Half-Century Limited," a special train from Boston through Hoosac Tunnel to North Adams, then to Adams on the ex-Boston & Albany North Adams Branch.

Mass Bay RRE commissioned a commemorative plaque, which Guilford Rail System placed on the face of the tunnel's east portal. During the 1984 excursion, the group held a dedication ceremony at the tunnel marking the 50th anniversary of the 1934 trip.

Sadly, the plaque was reported missing the week of April 3, 2004. Mass Bay RRE has authorized a \$500 reward for

recovery of the plaque. If you have any information on the matter, contact the group at MassBayRRE@aol.com, or at (617) 489-5277, or P.O. Box 2742, Woburn, MA 01888.

Link steam sounds on CD

When we ran John Gruber's story "O. Winston Link's Sounds of Steam" in our Summer 2001 issue, only one of Link's landmark albums, first released as LP records, was available in compact disc form. Now, thanks to more than 5000 hours of painstaking restoration, all five of his Norfolk & Western steam-sound albums, plus a 45-rpm of the Civil War 4-4-0 *General*, are out as CD's. The boxed set includes *Sounds of Steam Railroading* (1957), *The Fading Giant* ('57; CD, '98), *Thunder on Blue Ridge* ('58), *2nd Pigeon and the Mockingbird* ('61), *The General* ('62), and *Mainline to Panther* ('77). A detailed, 28-page booklet accompanies each disc.

The Link recordings are an indispensable part of the history of American railroading. But don't take our word for it: the Library of Congress recently included them in a group of 50 sound recordings it is preserving to



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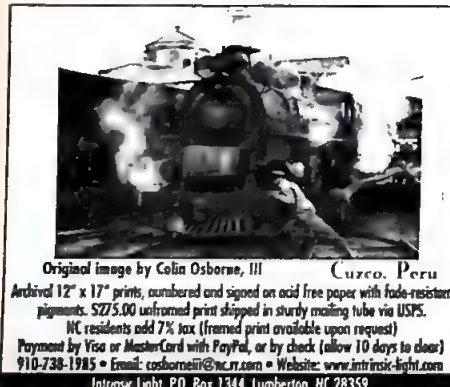
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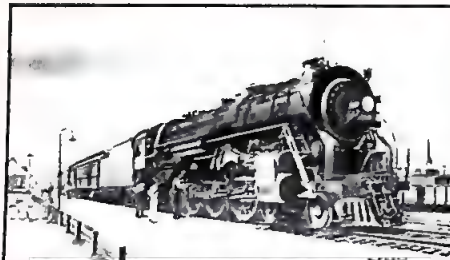
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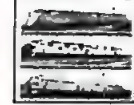
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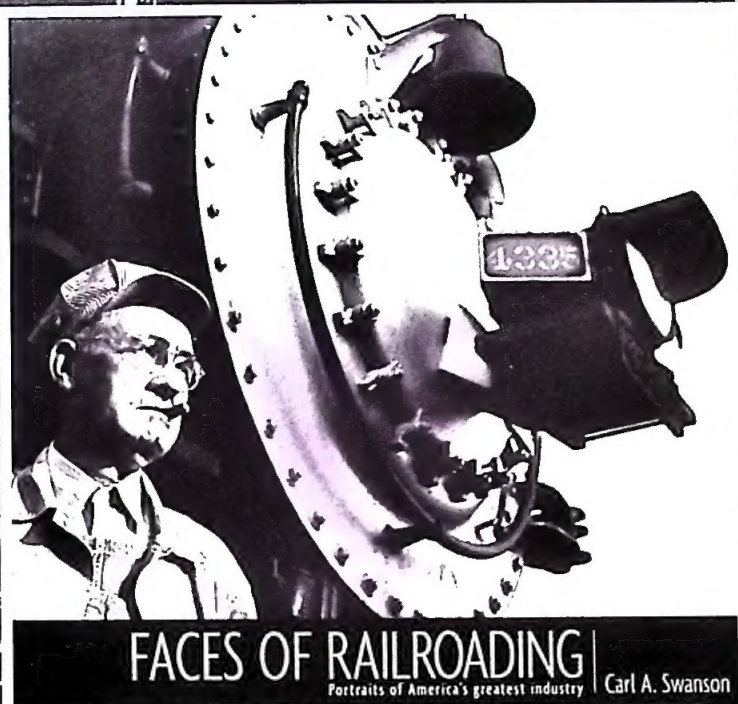
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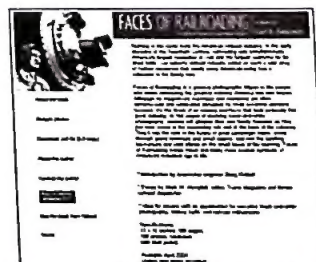
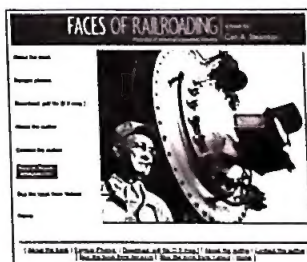
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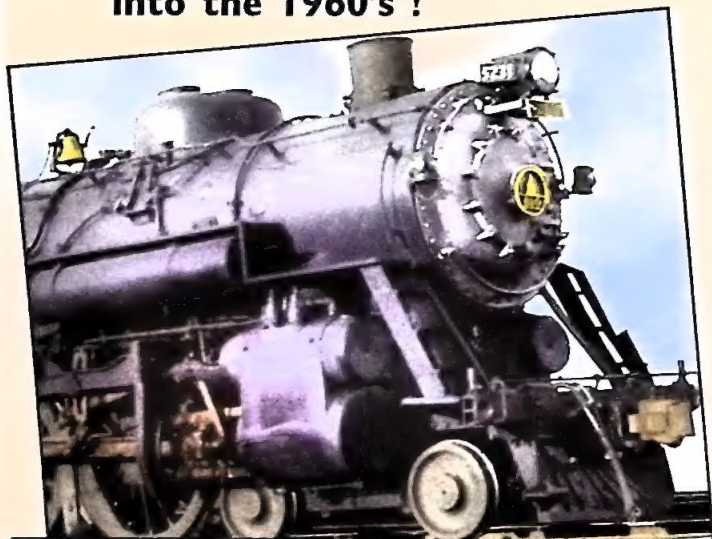
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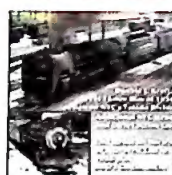
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